

August 11, 1944

THE RAILWAY GAZETTE

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THE RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
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An index to the eightieth volume of THE RAILWAY GAZETTE, covering the issues from January 7 to June 30, 1944, has been prepared, and is now available free of charge on application to the Publisher

DIESEL RAILWAY TRACTION SUPPLEMENT

The August issue of THE RAILWAY GAZETTE Supplement, illustrating and describing developments in Diesel Railway Traction, is now ready, price 1s.

GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as indicating that they are available for export

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE possesses the necessary permit and facilities for such dispatch. We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

TO CALLERS AND TELEPHONERS

Until further notice our office hours are:
Mondays to Fridays 9.30 a.m. till 5.30 p.m.

The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

Retirement of Mr. Ashton Davies

A NUMBER of important changes among senior officers has been announced by the London Midland & Scottish Railway Company; they will have effect from the end of this month. On August 31 Mr. Ashton Davies, who has been a Vice-President since June 1, 1938, retires and is succeeded by Mr. T. W. Royle. Mr. Ashton Davies has been in the service of the L.M.S.R. and its constituent companies for more than 53 years. He began his railway career in 1890 on the Lancashire & Yorkshire Railway. Among the outstanding work he has performed has been that of welding together the whole of the company's organisation for dealing with the public on all phases of its goods and passenger business. This he did when in 1932 he was appointed to the newly-created post of Chief Commercial Manager, and became responsible for the initiation of all arrangements and facilities for the conveyance, development, and co-ordination of the company's traffic. He was, in fact, the service and sales manager, directing the activities of all the area commercial officers throughout the system, and carrying out the commercial policy of the company. It was his special province to gauge the requirements of the traders and the public, and to see that they were met, and this he did with conspicuous success.

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Other L.M.S.R. Retirements and Appointments

Mr. T. W. Royle, who has been Chief Operating Manager since the middle of 1938, like Mr. Ashton Davies, is an old Lancashire & Yorkshire man; he joined that railway in 1898. He has been closely associated with Mr. Ashton Davies, for from 1932 until 1938, when he was appointed Chief Operating Manager, he was Assistant Chief Commercial Manager, and then Chief Assistant Commercial Manager. Mr. Royle's successor is Mr. S. H. Fisher, who has been Deputy Chief Operating Manager since the end of last year. Mr. H. V. Mosley, Chief Officer for New Works and Parliamentary Business, is also retiring. He entered the Midland Railway service in 1896, and at the time of the amalgamation was Joint Assistant General Manager of that company. He has held the position from which he is about to retire since January 1927, and has been a member of the Executive Committee of the L.M.S.R. since early in 1930. In the Signal & Telegraph Department, Mr. A. F. Bound, Signal & Telegraph Engineer, is retiring from that position, which he has held since he joined the L.M.S.R. in 1929, after having been Signal Engineer (Southern Area) on the L.N.E.R. Mr. Bound is succeeded by Mr. W. Wood, Assistant Signal & Telegraph Engineer, who was also at one time with the L.N.E.R. as Electrical Engineer, Scotland. He left that company to join the L.M.S.R. as Principal Assistant to the Signal & Telegraph Engineer, Derby, in 1933.

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August Holiday Traffic

The August holiday weekend travel provided less trouble than the pessimists had feared in the light of recent excessive crowds—particularly those which resulted in the temporary closing of Paddington Station on July 29—and the traffic was expeditiously and skilfully handled by the railways. Special arrangements were made at Waterloo and Paddington for queueing well away from the platforms and circulating areas, and the result was an orderliness which was reflected in the comfort of the passengers. On this occasion the railways were given a wide discretion as to the running of extra trains, and they succeeded in coping with all the demands made on them. Cases of passengers being left behind were relatively few, and in practically every instance they were able to travel to their destinations by a later train. Many holiday resorts reported large crowds of visitors, and there is no doubt that there was a considerable movement from London, and the main provincial centres. Nevertheless, the fact that the railway companies responded so well to the calls made on them points clearly to the wisdom of the removal of official curtailment of facilities without corresponding restriction on travel.

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Tribute to Railway Workers

The good work which railway employees have done during the war was the subject of tributes in the House of Commons recently. Sir Waldron Smithers asked if the Ministry of War Transport would recommend that a decoration should be given to all concerned with the British railways for their magnificent and often unseen work, and Mr. Noel-Baker, who replied, said that the Government was fully conscious that all ranks of railway personnel had done most notable work for the nation during the war. More than 400 individual decorations, medals, and commendations so far had been awarded to railwaymen for outstanding service, and no doubt further recommendations would be made. Lord Leathers considered that this method of

recognition was more appropriate than that suggested by Sir Waldron Smithers. Lt.-Colonel Sir Thomas Moore praised the courtesy, skill, and courage shown by L.P.T.B. staff. Mr. Noel-Baker said he was grateful for the opportunity of paying tribute once more to the magnificent way in which all road transport workers and, not least, the drivers and conductors of the London Passenger Transport Board, had responded to the testing demands made on them. He proposed to convey the terms of his reply to the Chairman of the Board; in so doing he would be voicing the general sentiment both of the country and the House.

Plans for Rebuilding the City of London

The report of the Improvements & Town Planning Committee of the Court of Common Council of the City of London has been published and has been laid open to public discussion before an expression of final opinions. The Committee makes it clear that these proposals are preliminary and tentative, and no attempt is made to estimate the cost. The main suggestion is the building of a ring route round the City which would enable traffic to bypass the more congested places, such as the Mansion House and the Bank of England. No important proposals are put forward for alterations in operation of the railways; improvements, including electrification (possibly with a two-level station at Liverpool Street), are no more than envisaged. In some ways, the City planners have shown a more realistic approach to the problem than some others. The City Engineer has stated that tens of millions of pounds would be required to remove the railway bridge across Ludgate Hill, and put the line underground, as was suggested in the County of London plan. No recommendations were made relating to railways, because these are considered matters "for the owners' initiative"—rather a new line to be adopted by planners—but it is at least clear that the feeling of the Committee is against moving the main-line stations away from the City.

Post-War Disposal of Government Stores

The President of the Board of Trade gave some assurances in the House of Commons recently on the post-war disposal of Government stores. He said that the Government's plans were designed to avoid the mistakes which occurred after the last war and that it was realised that with the end of hostilities there would be large stocks of certain raw materials; special plans would be needed to prevent any serious disturbance of markets or the balance of employment. The home market must not be flooded, and the public must not expect an unhealthily cheap market. There would be control over prices, and it was desired to distribute the stocks as far as possible through the normal channels, the hands of those who had traded in them in the past. As to Government factories, Mr. Dalton said that the normal procedure would be to lease them rather than sell them, and it had been decided that there should be controlled allocation to persons who applied for them, rather than that they should be sold merely to the highest bidder. The need to re-establish and expand our export trade, the establishment of a balanced distribution of industry, the contribution any factory could make to local employment, and the need for maintaining a suitable war potential in peacetime, would be borne in mind.

West Highland Railway Jubilee

Fifty years ago, on August 7, 1894, the West Highland Railway was brought into use for public traffic between Craigneloran and Fort William, and four days later the official opening by the Marchioness of Tweeddale took place. The West Highland provided the first instance in Scotland of 100 miles of railway being brought into use in one day and it opened up large tracts of territory in the West of Scotland hitherto almost inaccessible. In August, 1889, Parliamentary powers were obtained to construct the line, after opposition from the Highland and Caledonian Railways had been overcome. The first sod was cut by Lord Abinger in a field near the Ben Nevis distillery, Fort William, on October 23, 1889. The engineers were Formans & McCall of Glasgow, and their task was not made easier as the line had to be constructed with economy through most difficult country, and in districts where roads had never existed and even footpaths were scarce. Sharp curves abound throughout the route, which is single except at passing places, and the gradients are steep. Only one tunnel was originally driven (between Arrochar and Ardloch), but another was provided later, when a diversion was made necessary by the Lochaber power scheme. From the beginning, the West Highland was worked and maintained by the North British Railway. In 1907 the North British took over the working of the line from Spean Bridge to Fort Augustus, opened on July 22, 1903, and first operated by the Highland Railway (now L.M.S.R.). On December 31, 1908, the North British absorbed

the West Highland and six years later purchased the Fort Augustus line. In 1923 the North British became a constituent company of the L.N.E.R.

Reichsbahn Management of European Railways

One of the great problems with which the Germans have been faced, in their occupation of such a vast area of Europe, has been that of staffing the railways and other lines of communication. From the outset, it was accepted that German management was essential in all territories occupied by force, and Reichsbahn personnel had long been trained for the task—including those for Great Britain, Eire, and Spain. Obviously, Germans would have to be confined to key positions, on manpower grounds, and comprehensive plans were made for training local railway staffs in occupied territories. Particularly in the East, these seem to have been carried into effect with typical German thoroughness and efficiency, and some details which we have extracted from the German technical press regarding the staff arrangements in Poland (see page 142) give an idea of the scope and extent of the work. Segregation of German and non-German staffs was adopted rigidly, and attendance at both medical and educational centres was compulsory for non-Germans. Co-operation with German railway methods seems to have been secured by a fine adjustment of compulsion and persuasion, the latter in the form of housing, uniforms, food, and medical services, in an otherwise impoverished and devastated country.

Hungarian State Railways Reorganisation

It is reported that a drastic reorganisation of the regional managements of the Royal Hungarian State Railways has taken place recently. The Budapest-South Management now covers the largest area, comprising a system of 2,016 km. (1,252 miles). The other seven managements with their respective systems, in decreasing order of size, are: Debrecen (eastern Hungary) with a mileage of 1,761 km. (1,094 miles); Kolozsvár (Cluj in Roumanian), further to the east, with 1,703 km. (1,058 miles); Pecs (southern Hungary), to the west of the Danube with 1,691 km. (1,050 miles); Miskolc (northern Hungary), with 1,521 km. (945 miles); Szeged (southern Hungary, to the east of the Danube) with 1,503 km. (934 miles); Budapest-North with 1,295 km. (805 miles); and Szombathely (western Hungary) with 1,236 km. (768 miles). The present total route length of the Hungarian State Railways would thus appear to be 12,726 km. (7,906 miles). The technical supervision and maintenance services of the State Railways are now in the hands of 63 divisional engineering sections. It is stated that this reorganisation was due to the expansion of the State Railways resulting from the territorial additions made before and during the war. This expansion was outlined in *The Railway Gazette* for July 17, 1942.

Helping the Speedy Turnround of Wagons

The unremitting need for doing all possible to assist the speedy turnround of wagons is stressed in the *Production & Engineering Bulletin*, issued by the Ministry of Labour & National Service and the Ministry of Production. It points out that if no wagons were detained under load for more than 48 hours, the railways could move an additional 750,000 tons of traffic every month. This saving might make all the difference, in coming months, between transport sufficiency and deficiency. That some commercial undertakings hold wagons unnecessarily in their sidings is clear from recent experience. One firm, with 750 wagons on hand, when asked to speed their release found that it was able to do so by an all-round improvement in efficiency to such good effect that the rate of unloading was increased from 100 to 250 wagons a day. The *Bulletin* gives fourteen "turnround points" for traders. These include: buying all materials as near as possible to the place of consumption; loading wagons so that they can be unloaded from either side; consulting the railway company before preparing an unusually large or heavy item for transport by rail; making the most of mechanical aids and trucking facilities on the loading bank; packing all goods as carefully and securely as possible; labelling all goods carefully; and so forth.

The Colour Problem in U.S.A.

As was almost inevitable, the aim of racial equality for which the Allied Nations are fighting in the present war is having immediate repercussions where the colour bar has previously prevented negroes from assuming positions of responsibility, and particularly in the United States. Shortage of labour is doubtless some incentive to the removal of the bar. A strong lever has been the "directive" issued by President Roosevelt's Committee on Fair Employment Practice against certain southern railways and labour unions of the U.S.A., calling on them immediately to cease discrimination against negroes. The railways

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concerned, however, contend that such a directive has not the force of law, and that they are bound to consider the probable disturbance both of the travelling public and of organised labour if they carry the Committee instruction into effect. Meantime, however, the Pennsylvania Railroad decided in September last to open various skilled operations in its mechanical department to negroes; since the same date there has been an increase of over 400 negro mechanics and mechanics' helpers in Pennsylvania shops, yards, and locomotive sheds.

Track Maintenance Staff in India

The safety of the travelling public in India depends on permanent way gangs—usually about three men to a mile of track, including a mate and a keyman (or, in British parlance, a ganger and sub-ganger)—consisting of unsophisticated villagers, paid at the local agricultural rates equivalent to, perhaps, 9d. or 1s. a day. There may be a few remaining covenanted permanent way inspectors brought out from the United Kingdom, but the great bulk of the inspectors are Anglo-Indians and Indians, with a few country-born Europeans, all trained in India. Under them are sub-inspectors and head-mates, mostly Indians. There is, however, a widespread apprentice system of training, and the railway staff training schools also have classes for permanent way improvers. Support for the Permanent Way Institution from India has increased rapidly since the last war. On September 6, 1938, the South Indian Section was formed, with headquarters at Madras; it now has 380 members. A Bombay & Western India Section came into being during 1941, and already has a strength of 326. The permanent way inspector's mode of travelling over his section is by man-propelled trolley. Four men form a team and work it in relays, two at a time. They run bare-footed on the rails pushing the trolley, and, having gained speed, spring on the trolley, jumping back on the rails when further momentum is needed.

Signalling on the Chicago Subway

Chicago long lagged behind American cities of comparable importance in the matter of underground electric railway routes, although their provision was under discussion for many years, but when, in October last, it put its first route into service it did so with the utmost modern traction and associated equipment. The signalling comprises some relay panel signal boxes and facilities for working all trains on one track, to free the other for maintenance gangs. The block sections are arranged with 3-aspect signals and full block overlap, an arrangement long popular in subway services in America, with a system of speed control at the approach to stations and on the down grades leading to the subway from the elevated routes. At the stations the circuits allow of a train closing up to the one ahead, under yellow aspects, so shortening the overlap, and on the grades they aim at preventing an excessive speed being reached. Red aspects are supported by automatic stops. Speed control on down grades is in use on the Northern line in London. It is of some interest to note that the track circuits are of the single-rail type throughout. America did great pioneer work in track circuiting on electric railways, but in some respects the latest installations in this country appear to be in advance of the practice there.

Obsolescent Rolling Stock

Some interesting remarks were made recently by Mr. K. F. Nystrom, of the Chicago, Milwaukee, St. Paul & Pacific Railroad, in outlining to the New England Railroad Club at Boston the conditions which railways would have to face after the war. In dealing with the matter of obsolescence in rolling stock, he gave it as his opinion that allowances for depreciation should be increased sufficiently to permit all motive power and rolling stock to be written off as scrap within 15 years of building. The money derived from depreciation accounts should be earmarked and used exclusively for the replacement of old equipment. Not only would this policy be of advantage to the railways in enabling them to meet the competition of the roads and the air by keeping their rolling stock constantly up to date, but the constant demands for new stock would be a considerable bulwark against unemployment, by reason of the large number of industries which would benefit. In Mr. Nystrom's judgment, it is a false economy to spend money in rebuilding old equipment; under existing conditions there may be some justification for improving the older steam locomotives, but none for modernising heavy all-steel cars that are over 25 years old, and the argument applies with equal force to freight wagons. In any event, the future competition cannot be met with cars which have seen up to half-a-century of service, and there is a strong case for the American railways to be permitted, in the present times of heavy traffic, to accumulate funds which will enable them systematically to replace their obsolescent and obsolete rolling stock.

Railway Control Agreement

As reported in our Parliamentary Notes, Sir John Mellor took the opportunity in the House of Commons on August 1, on the motion for the adjournment, to raise certain points regarding the provisions of the Railway Control Agreement. He asked the Parliamentary Secretary to the Ministry of War Transport whether the railway chairmen were correct in stating that it was understood at the time the new agreement was entered into that, should new circumstances of a major kind arise, the financial provisions of the agreement might be re-opened; whether the new financial provisions were a fair exchange for the old terms, and whether they were accepted voluntarily or forced on the companies by political pressure.

In reply, Mr. Noel-Baker referred to the statement of the railway chairmen that the Government made it clear that "if new circumstances arose it might again require the agreement to be amended," and Sir John Mellor's enquiry as to why the right to ask for revision was in one direction only, and contended the reply was quite simple. He stated that what Lord Leathers (who conducted the negotiations) had in mind was the possibility of some new decision of major policy quite outside the agreement and affecting not merely the control period but the *more distant future* and claimed that this was why the revision clause of the original agreement, which gave either party the right to ask for revision, was deliberately and by agreement dropped.

It would be very interesting to know precisely what new decision of major policy quite outside the agreement the Minister had in mind. Apart from this point, the "simple" explanation is rather difficult to understand in the light of the Railway Companies' Association letter of April 19, 1944, to the Minister. This stated categorically that the original draft railway agreement contained a clause under which the Minister or the railway companies could propose a revision of the arrangements for any cause of a major character and, if agreed by all parties, the arrangements could be revised accordingly and that, while a provision of this sort could have no legal significance and was for this reason not embodied in the revised agreement, it was made clear in the course of the negotiations that the Government did not wish to depart from this understanding as, if new circumstances arose, it might again require the agreement to be amended.

Turning to the point as to whether the financial provisions of the new agreement were even tolerably just, Mr. Noel-Baker reiterated his reply of December last that in the opinion of His Majesty's Government the provisions constitute a fair consideration for the control and use of the railway undertakings during the national emergency. Contrasting this with the statement of the Association memorandum that the railway chairmen accepted the revised terms "as a wartime measure and without regard to ordinary commercial considerations," he claimed that there was no conflict between the two statements. He pointed out that in addition to the final annual payment of £38,200,000 to the four main-line railway companies (which excludes the L.P.T.B.) the railways received from uncontrolled sources, such as investments in road transport undertakings, etc., a further £1,800,000, making their total net revenue £40,000,000. By an obvious slip he claimed that this was the total sum payable under the agreement, whereas he should have referred to the figure of £38,200,000.

He then recalled that recently he said that under this arrangement the railways got a remuneration considerably above anything they earned in peacetime. This was challenged in the press by a reference to the railway companies' earnings in 1929, which totalled nearly £44,000,000. Mr. Noel-Baker claimed, however, that the only reasonable plan was to take the average net revenue of the last ten years before the war, namely, from 1929 to 1938, which was £34,000,000. Thus he alleged that the new agreement gave the companies £5,200,000 more than their average for the ten years, an increase of 15 per cent. Once again his arithmetic is a little difficult to follow, as presumably he intended to compare the £34 millions with the figure of £40 millions he had previously mentioned. It is also difficult to know why he selected a ten-year period for comparison with pre-war railway earnings when a much shorter period is taken for other industries. He claimed, however, that the Government still considered the figure was just, as it had consistently applied the principle that there should be a strict limitation of the profits of war.

Turning to the position of the holders of junior railway stocks, he claimed that apart from two classes of L.N.E.R. stock with a nominal value of £78,600,000 which receive no dividend under the agreement, and did not receive any for sixteen years previously, their dividends for the years 1935-1938

showed a substantial increase. He did not, however, give any indication as to why he averaged railway earnings over ten years, and dividends over four years only. After pointing out that the standard revenue provisions of the Railways Act, 1921, did not give the railways a legal right to a net revenue of £51,400,000 a year, but only the right to earn it if they could, he was proceeding to explain why the Government was not willing to publish the documents exchanged with the railway companies when, unfortunately, the House adjourned, leaving his argument unfinished.

Some Basic Considerations in Fabricated Construction

THE swing from the use of steel castings to fabricated components grows apace; having once been forced on engineers, perhaps before they were quite ready for it, by the impossibility of obtaining steel castings for anything but priority work, there is now a tendency to adopt it to a degree which cannot always be justified, either on economic or on engineering grounds. Granted that steel castings are virtually unobtainable for a large range of engineering manufactures, the designer's task is, or should be, not blindly to specify welded construction, but to consider whether cast iron could not in certain cases replace cast steel.

Difficulties have arisen already in large engineering works as a result of this situation, and have been much aggravated by lack of co-operation between the drawing office and the workshop staff. Over-devotion to welding on the part of the designer has led to the creation of a new and hitherto unexpected bottleneck, due simply to the fact that fabricated construction has been specified on the drawings to such a degree that the workshops have been unable to produce a sufficient number of trained welders to deal with it. Delays have ensued whilst frantic efforts were being made to rush extra men through instruction courses intended to provide them with a reasonable degree of competence.

When fabricated construction is properly considered as a companion, rather than as a supplanter, of the casting process—whether steel or iron—much of the existing chaos will cease. Now is the time to prepare for this more enlightened outlook. The appearance of a paper on "The Application of Fabricated Construction to Machine Design," by Mr. F. Koenigsberger, A.M.I.Mech.E., at this stage was a shrewd move on the part of the Council of the Institution of Mechanical Engineers, which arranged for its presentation at a general meeting on April 28.

The author makes it clear that he is laying down basic principles for the design and fabrication of welded structures, and these are presented in a masterly way, which makes the paper all the more valuable, since these fundamentals, it is clearly shown, are equally applicable in other directions than to the bedplates, headstocks, and so forth, of machine tools. Two points which he specially emphasised at the meeting run rather against present practice in a number of existing works, but an excellent case is made out in support of them, and they are worth repeating here. First, it should be the business of the design staff to plan the whole welding job completely from beginning to end, that is, to decide the permissible stresses, show on the drawings the most economical way of cutting the material, give instructions for the welding operations, and specify any final heat treatment that may be required. Guillotines or shears, in preference to flame cutting, should be used wherever possible. An assembly drawing should also be made, showing the sequence in which the various welds are to be carried out. Second, by far the most convenient—and usually the most economical method of holding a job during welding is by means of welding "positioners," sometimes called "manipulators." The advantages which they afford have been considered sufficiently important as to justify the publication, in the national interest, of a special Welding Memorandum (No. 3), issued by the Advisory Service on Welding of the Ministry of Supply. Where especially large and heavy assemblies are concerned, many hours of working time can be saved if manipulators are used instead of overhead cranes for turning the job this way and that, to permit downhand welding wherever possible. Trunnions by which the assembly is held in the manipulator, are welded into their respective positions before the main welding job begins, and on its conclusion they are usually removed by burning with a torch.

Apart from a number of detailed descriptions of efficient welding technique, the author gives much sound and valuable advice, especially when he exhorts designers to rid themselves of the "casting mentality," and to design to suit the conditions of manufacture by fabrication, not merely for the sake of following a new fashion, but because of a desire to exploit the welding process to the full extent where it offers technical and economic

advantages. It is seldom that such a wealth of technical information and practical advice has been gathered in a paper on this subject, and the author is to be commended on this notable contribution to its engineering aspects.

Brighton Locomotives—A Retrospect

THE volume of railway passenger traffic and the prosperity of seaside resorts are so closely bound together, that it is an accepted peacetime practice for the railways and the local authorities to issue combined publicity and to share the cost of "resort" advertising. In present conditions, with large coastal areas barred to pleasure and holiday traffic, with travel advertising suspended, and with all forms of non-essential travel officially discouraged, it is possible that this mutual interdependence may fall into the background. So far as the Southern Railway is concerned, the company's Public Relations Department has regarded it as a pleasant duty to maintain local interest in the railway, by means of simple but effective local "austerity" exhibitions on the occasion of centenaries and otherwise. One such exhibition was opened on Friday last (August 4), at Brighton, and, as there is no convenient centenary peg for the event, attention was directed by means of an attractive series of photographs to the locomotive and shipping history of the former London, Brighton & South Coast Railway. Brighton was one of the early locomotive production centres of the constituents of the Southern Railway, and it has had a particularly interesting locomotive history under the direction, for the periods indicated in brackets, of such famous personalities as John Chester Craven (1852-1869), William Stroudley (1870-1889), Robert J. Billinton (1890-1904), Douglas Earle Marsh (1905-1911), and L. B. Billinton (1912-1922).

The Brighton Locomotive Works first turned out an engine in May, 1852, when No. 14, a single-wheel well-tank was built by Craven. In February, 1870, Stroudley came from the Highland Railway and took over the duties of Locomotive Superintendent. His first engines were a pair of small 0-4-2 tanks Nos. 18 and 21 completed in December, 1871. In October, 1872, the first of the famous "Terrier" engines appeared; they were designed for working the South London Railway. At the time they were described as beautiful little engines, doing remarkable work considering their diminutive size, for the wheels were only 4 ft. in dia. and the total weight was but 24 tons 7 cwt. Between October, 1872, and September, 1880, no fewer than 50 of this class were built; all were given names and were numbered from 35 to 84. No. 40 was shown at the Paris Exhibition of 1878 and received a Gold Medal. In December, 1874, Stroudley completed his first single-wheel express engine, the *Grosvenor*, with 6-ft. 9-in. driving wheels. The first of the magnificent "Gladstone" class appeared at the end of 1882, to prove the most powerful express passenger engines for their weight ever built—38 tons 14 cwt. Thirty-six of this type of engine were built. In later years No. 184 was named *Stroudley*, and No. 214 *Gladstone*; the latter is now in the Railway Museum at York. The last of this celebrated class was not withdrawn until 1933, when the London-Brighton line was electrified. Stroudley always believed that, if an engine was made and maintained as carefully as possible, it would respond to the attention it received, and for that reason one engine was retained for each driver. Consequently, a driver took a great pride in his own particular engine. Unfortunately for locomotive construction, Stroudley died in December, 1889. It was in this year that Engine No. 189 *Edward Blount* gained a Gold Medal in the Paris Exhibition.

In February, 1890, Robert J. Billinton succeeded to the position, after having had experience with the Midland Railway. His first design to be put into service was an 0-4-4 tank, of which 36 were built between 1892 and November, 1896. In 1895 the first of an entirely new type for the Brighton Company appeared, namely, a four-coupled express engine with leading bogie and 6-ft. 9-in. driving wheels. In 1897 a set of 75 six-coupled radial tank engines for general purposes was begun, of which 12 subsequently did work in Northern France from 1917 to 1919. Billinton's last locomotives were a dozen 0-6-2 goods tanks, but he died in November, 1904, before the first one came out of the works.

In January, 1905, Earle Marsh became Locomotive Engineer. One of his first changes was to substitute darkumber for the "Stroudley" yellow-coloured passenger engines, and adopt black for the goods; at the same time he abolished names for engines except in a few special cases. At the end of 1905 a large Atlantic (4-4-2) express engine appeared, copied from the G.N.R. type, and altogether five were built, which did fine work in later years on the Newhaven boat expresses. In 1906 a new class of 4-4-2 tank engines was introduced, the third series of which

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became the first tanks of this wheel arrangement to be used for main-line express traffic in this country and led to the practice being adopted extensively on other lines. Encouraged by the success of these engines, Marsh produced a large tank engine in December, 1910, of the 4-6-2 type, numbered 325 and named *Abergavenny*. In 1911 he built six more Atlantic class, all of which, after Grouping, were named after prominent headlands of the English coast.

January, 1912, saw L. B. Billinton, son of Robert, appointed Locomotive Engineer; he had been with the company since leaving school. He began with five six-coupled tanks, and in 1913 introduced a powerful type of Mogul goods engine, completing the class with 17. In April, 1914, the first of a class of seven large tank engines of the Baltic (4-6-4) type appeared; this was No. 327. The last, No. 333, came out in April, 1922, and was named *Remembrance* in honour of the 532 men of the E.B. & S.C.R. who gave their lives in the Great War. In view of the increase of electrification, it was considered that there was no scope for these particular tanks, and it was decided in 1934 to rebuild them as tender engines; No. 2332 was named *Stroudley*. In 1931 the numbers of all L.B. & S.C.R. locomotives taken over by the Southern Railway were prefixed by "2."

On the absorption of the L.B. & S.C.R. by the Southern Railway in 1923, Mr. R. E. L. Maunsell became Chief Mechanical Engineer, with Eastleigh as the principal centre for locomotive construction. He was responsible for the "River" class tank engines, which were later rebuilt with tender; 54 of the "King Arthur" class; and 40 "Schools," named after famous public schools. In 1937 Mr. Maunsell retired and was succeeded by Mr. O. V. Bulleid from the L.N.E.R. who brought out the powerful mixed-traffic "Merchant Navy" class locomotives, each of the 10 named after prominent shipping companies using the Southern Railway Southampton Docks in peacetime, and the "Q1" Austerity goods engine.

American Railway Freight Progress

ON May 20 our American contemporary, the *Railway Age*, published a Freight Progress Annual Number, which gives a stirring picture of the wartime achievements of the United States railways. With justifiable pride, the Editor of the *Railway Age* claims that this comprehensive review of railway freight operating "shows what a free people can do when given an opportunity to tackle a gigantic problem without coercion." In the twelve months ended March 31 last the railways rendered 122 per cent. more freight service than in the year ended March 31, 1940, with an increase of only 10 per cent. in the total number of wagons on line and a small decrease in the number of road freight locomotives. In addition, the railways have handled four times as many passengers as they carried four years before. Freight traffic was still increasing up to the end of March, but the rate of growth in that month was only 2 per cent. as compared with nearly 7 per cent. for the first quarter of this year. Evidently production for war purposes is approaching the topmost peak and the railways may get some relief soon. The size of their war effort may be judged from the fact that the ton-miles worked during January, February and March were equal to nine times the ton-mileage of our railways for the whole year 1937. The American railways move 90 per cent. of all military freight and nearly three-fourths of all commercial freight in the States. They move it at an average charge of less than a cent for hauling a ton for one mile, and not a single rise in commodity prices can be attributed to any increase in rail rates.

The annual number gives full credit to traders for their zeal in improving wagon user. It also enlarges on the spirit of friendly co-operation which exists between the carriers and government agencies, adding that the Interstate Commerce Commission Bureau of Service and the Office of Defense Transportation have helped by doing many things that would have been quite beyond the power of the railways.

Instead of issuing peremptory orders that might lead to confusion and congestion, the Transportation staff of the Army and Navy has been content to place responsibility for transport on the railways and has then done all it could to effect the desired results. Responsibility for these results is concentrated on the Military Transportation Section of the Association of American Railroads. This section is located alongside the Army Traffic Control division at the Army Headquarters, Washington, D.C., so that close touch can be kept between the railways and the War Departments as to plans for traffic movements.

The Military Transportation Section of the A.A.R. would appear to play much the same part as the Operating Office of the Railway Executive Committee fills in our emergency organisation. At ports, also, the arrangements for controlling ship-

ments correspond pretty closely on the two sides of the Atlantic. At the principal U.S.A. ports there are counterparts to our Port Emergency Committees, which are a medium for the frank exchange of views between the people responsible for the release of wagons and the railway and marine staffs. So effective is the work of these committees that in 1943 the American railways moved without serious difficulty the greatest volume of export freight traffic on record.

The exports from North Atlantic ports last year were nearly double the shipments in any year of the first world war and exceeded by 35 per cent. the figures for the heaviest peacetime year—1925. Traffic to the Pacific coast for the forces fighting in the Far East likewise has thrown a great strain on the trans-continental railways. The Southern Pacific, to select one example, operated in 1943 two-and-a-half times the net freight ton-miles recorded in 1939. Yet the freight train miles increased not quite half as much, showing that the Southern Pacific conserved its manpower and equipment. On all the western railways there used to be a seasonal ebb and flow of traffic. Now the carriers are continuously working at full stretch but, in spite of their long hauls and large single-track mileage, they have managed to keep the Pacific seaports "fluid"; in other words blocks of shipment goods have been unknown.

The Southern Pacific gives four reasons for its own success:

- (1) Many millions spent in pre-war and war years on equipment and betterments;
- (2) management "know-how" and the good work done by the 100,000 men and women who make the railway run;
- (3) the helpful co-operation of army, navy and civilian consignors of goods;
- (4) the constructive attitude of government agencies dealing with transport.

Many other railway systems would offer much the same explanation for their fine results. Here are a few striking figures for 1943. The Pennsylvania operating revenue (freight and passenger) reached the all-time record for an individual American railway of \$979,773,000, an increase of \$141,298,000 over 1942. The New York Central operating ratio was 67·6, the lowest since 1916. The Norfolk & Western worked 26,246 net tons per mile of road on an average day—an all-time high which compares with 24,940 in 1942. Measured by this statistic the Norfolk & Western, carrying about 50 million tons of coal a year, for some time has had the greatest freight traffic density of the main American lines, but the Chesapeake & Ohio, another coal-carrying line, is not far behind.

The Erie, too, has a dense freight traffic, with a gross train load of nearly 3,000 tons and an average haul of 284 miles. This beats the Baltimore & Ohio, whose gross train load of 2,433 tons was a record for its own line. The Illinois Central worked 11 per cent. more net ton-miles than in 1942 with a decrease of 2·3 per cent. in freight train miles. The feat was done by bringing the number of wagons on a train up by 7 per cent. to 61 and moving each wagon 67 miles in a day.

The Missouri Pacific Lines—connecting links between Atlantic, Pacific and Gulf Coast ports—had an increase of 20 per cent. over 1942 in freight ton-mileage and more than doubled their passenger mileage.

A progressive programme of improvements, begun more than 20 years ago, equipped the Missouri Pacific lines to deal with the pressure of war traffic. In particular centralised traffic control has been installed on 570 route miles and is reported to double the capacity of a single-track section. On the average every freight wagon saves one minute on every mile of line where this form of control has replaced the old system of authorising train movements by timetable and train order. Since December, 1942, C.T.C. has been extended to about 3,000 more miles spread over a number of American railways.

Even allowing for the use of the short ton of 2,000 lb. in compiling the returns, these American statistics are impressive. The Annual also contains instructive articles on a variety of subjects such as manpower, the provision of freight rolling stock and the supply of permanent way materials. These questions are common to British and American railways and it is gratifying that their importance is being brought home to the government departments concerned with labour and the production of materials. Another common interest on both sides of the Atlantic Ocean is the need for "a programme of realistic and practical studies which are designed to point the way to future progress in all phases of railroading." The annual number emphasises the wisdom shown by the Association of American Railroads in undertaking research into all matters which have a bearing on the development of transport after the war and we may return to the subject in a later issue. In concluding this article we congratulate the *Railway Age* on its enterprise in preparing this informative number. We have enjoyed the perusal of its pages—not omitting the advertisements—and envy our American contemporary the possession of complete and up-to-date railway statistics, without which the special number would have been ineffective, if not sterile.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Free Wheels for Rolling Stock

London Midland & Scottish Railway Company,
Chief Mechanical & Electrical Engineer's Office,
Nelson Street, Derby. July 25

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In the issue of *The Railway Gazette* for March 24 there is a leading article under the heading of "Free Wheels for Rolling Stock," which is a comment on Mr. Newberry's paper on the "Riding and Wearing Qualities of Railway Carriage Tyres." In this article you suggest that free wheels on coaching stock would have many advantages, which you enumerate, and suggest that nothing of this kind has been tried in this country.

It may be of interest to your readers to know that a trial was carried out recently on the L.M.S.R. with a bogie passenger van fitted with independent free wheels, that is, one wheel of each axle was fixed to the axle and the other was free to revolve on it. The design was such that in the event of the trial being successful, existing wheels and probably axles could be used in the conversion.

It was thought that this arrangement would reduce wear on the tread of the tyre and prevent hunting of bogies. The trial showed, however, that the arrangement had definite disadvantages. The first was the possibility of one or other of the wheels picking up and forming flats on the treads. This is a serious objection and difficult to overcome. The second was excessive wear on flanges. This is understandable because with the standard arrangement, as the wheels are keyed to the axle, the coned tyres tend to keep the flanges clear of the rail whereas with the modified arrangement there is nothing to prevent the flanges continually bearing on the side of the rails, and this does, in fact, occur, hence the wear. There was no reduction in the wear on the tread of the tyres; in fact, it was rather more than with a normal coach. This is somewhat surprising and not easy to explain. Due to the above defects, the experiment was not carried far enough to ascertain whether hunting of the bogies was prevented.

As regards freer running on curves, the trial showed that the vehicle with free-wheels, if propelled on a curve with equal force to an ordinary vehicle, travelled very much further before coming to rest. Incidentally, the axle and wheels assembly were difficult to handle in the works as they would not stay on the rails if propelled in the ordinary manner, and it was, in fact, necessary to transport them by crane power.

In 1936 the L.M.S.R. gave careful consideration to the merits of a Swiss design of bogie in which eight independent wheels were carried on stub axles inclined at 1 in 20 and which was described in *The Railway Gazette* of March 20, 1936. By all accounts this arrangement gave good riding characteristics and very little wear both on the treads and flanges of the tyres when tried on the Continent; it is, however, expensive in first cost and presents certain difficulties in design.

Yours faithfully
H. G. IVATT,
Principal Assistant for Locomotives

Railway Electrification Pros and Cons

Essex. July 31

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In your July 28 issue "Statistician" gave short shrift to the writer of the article which you published the previous week. In view of the importance of making headway with electric traction on our railways, may I crave your leave to deal with some of the arguments put forward by "a well-informed source" for marking time?

It is suggested that even in suburban areas further electrification schemes cannot be undertaken until a policy for transport as a whole is settled. We have had 40 years' experience of suburban electrification and I do not know of any scheme which has not resulted in better service and increased traffic, with a noticeable "staggering" of passenger journeys through the adoption of "interval" timetables. The economic success of suburban and outer-suburban electrification has been definitely established. It is the railway's answer to the rivalry of the bus and the private car. The Southern Railway saw this long ago and the steady increase in its passenger receipts, as additional branches were converted, is its reward.

For main-line working a steam locomotive costs less than an electrical machine but, in spite of recent improvements, is not an economical power unit and becomes more wasteful with every rise in the price of coal. Dear coal strengthens the case for

converting main lines carrying a dense traffic, especially when gradients are stiff. It is not the case that there would be little difference in speed. Without altering the maximum speed, the average speed of both passenger and freight trains certainly would be improved and the capacity of the line would be increased. This is clearly brought out in the article on the Pennsylvania's use of electric operation to best advantage, which appeared in your July 21 issue and in a previous article telling how that American railway ran 100 passenger trains daily at an average speed of 60 miles an hour between Newark and North Philadelphia, a distance of 76 miles. Its interval services between New York and Washington—225 miles with at least 5 stops in 4 hr. 5 min.—could not have been operated by steam.

Mobility is claimed for the steam locomotive. In theory a machine which is its own source of power is flexible, but practice proves the great efficiency of the electric motor. In 1938 the Southern had a stock of 1,415 electric motor vehicles. On one day 1,401 of these were at work: the average number in use on weekdays was 1,272, representing 90 per cent. of the stock, and each of them ran 252 miles a day. On all the railways only 75 per cent. of the steam locomotives owned were in use on weekdays and ran an average mileage of 111. Statistics of locomotive performance do not point to very great improvements in the inter-war period. Coal consumption has been reduced and repairs have been speeded up, but the average freight train moved at less than 10 miles an hour with a net load of 125 tons or thereabouts.

Under a prudent scheme of conversion there need not be premature destruction of substantial amounts of capital and additional investment in fixed assets would naturally be taken into account in estimating the advantages of electrification in a particular area. But the weakest argument in the article is that displacement of manpower caused by a changeover would have to be considered in the light of the Government's employment policy. This is of a piece with the idea propounded in the Nuffield College report on "Problems of Scientific & Industrial Research" that our rate of industrial progress may be too rapid. You rightly stamp on this notion in the last paragraph but one of your commentary (July 21, page 57). This country in the past has not displayed outstanding enterprise in using electric power for industrial purposes, and it is to be hoped that the railways will not be deterred by the timidity of your "well-informed source" of information. He overlooks that the object of installing electric traction is to attract new business as well as to retain present custom. The railways were losing traffic before the war and a judicious policy of electrification appears to be their best hope of stopping the rot and re-establishing themselves on a sound financial basis when the war ends. To miss this opportunity of modernising their methods will simply play into the hands of the advocates of public ownership of all transport undertakings.

Yours faithfully,
EAST ANGLIAN

[“East Anglian” does not deal with the possible use of diesel-electric locomotives for main-line express services on British railways after the war.—ED. R.G.]

Use of Locomotives at Kings Cross

112, Derwent Avenue, East Barnet, Herts. August 3

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I am amazed at the methods used for positioning main-line trains at Kings Cross Station before departure. Under the present system, a pilot engine usually pulls the train into position approximately 1 hr. before departure, but on Sundays this seems to be extended to 2 hr. This means that the pilot engine and the crew cannot be used again until the main-line train departs, and in these days when every effort is required it seems wrong that engines should be virtually immobilised for considerable periods.

To the ordinary passenger who passes through the station, the solution seems to be that main-line trains should be pushed and not pulled into position, thus releasing the pilot engine immediately for other work. As trains used solely for the conveyance of goods by passenger services are already pushed into position at platform 1 and 11, is it not practicable to use the same methods for handling departing main-line passenger carrying trains?

Yours faithfully,

E. CHALMERS

[Our correspondent evidently overlooks the fact that the locomotives bringing empty trains into Kings Cross are used to give assistance to the train engines on starting, in view of the heavy present-day loads, and the rising gradient from the platform end. In winter the former locomotives are used also to supply steam heat to the trains until the train engine is attached.—ED. R.G.]

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The Scrap Heap

Great Britain's railway workers have contributed £330,000 to the Red Cross Penny-a-Week Fund. Totals for the four groups are L.M.S.R. £129,000; L.N.E.R. £120,000; G.W.R. £43,000; S.R. £37,500. Employees of Northern Ireland railways have contributed £210.

TO CLIPPING CLIPPIE—£10

A man who recently was fined £5, with the alternative of one month's imprisonment, and ordered to pay nearly £5 costs, admitted that he had struck an L.P.T.B. conductress in the mouth with his fist after she had asked him to sit down inside a bus on which he was returning home from church. The conductress said that the blow knocked her off her feet, and that another passenger saved her from falling off the bus.

HE PUTS IN THE PIPS

When the Queen visited Reading Army Comforts Depot recently she met Mr. A. W. Turner, a G.W.R. signalman, whose part-time job is to make up packs of cards for the troops. He told the Queen that packs sent in are sometimes a card or two short, and he makes good the deficiencies by printing the pips in Indian ink on blank cards at home.

"A very willing and very ingenious man," said the Queen.—From "The Star."

"JUNIOR WAR POLICE" IN LONG ISLAND, U.S.A.

The Superintendent of the Long Island Rail Road, Mr. E. L. Hofmann, has announced the formation of an "Auxiliary Junior War Police" force, which is to work as an adjunct of the railway's own police division. The purpose of this enterprise is to check stone-throwing, and other acts of juvenile vandalism that are damaging to railway property, by encouraging the juniors themselves to take an active interest in the welfare of the railway. Already the advance volunteer membership of boys up to 16 years of age totals 400. Every member gives a pledge himself "to commit no depredations against property, and to do his best to prevent others from doing so."

RAILWAY VIEWS

Many views have before now had indignant defenders against the intrusion of too practical ugliness, but these stalwarts are as a rule those who live upon the spot or know it intimately as a holiday home. Durham has now roused in its defence a second line, ready to fling itself into the fray under the episcopal banner, drawn from the ranks of those who have known and loved the view only from a railway carriage window. This is a mighty army, as yet unorganised but past all counting and formidable from mere weight of numbers, since there is no traveller so somnolent that he has not several of these railway views very near his heart.

Of these the Durham view is wholly beautiful for its own sake, but there are others which owe at least part of their appeal to circumstances and particularly to the fact that they mark that magical and romantic thing, a border. Scotsmen and Englishmen alike though from different emotions must thrill in every fibre as their train comes curving into Berwick and they see the Tweed rippling below.

Incidentally a curving line embraces a wider prospect and so gives a particular quality to the view, witness as one example the glimpse of Eton Chapel followed by Windsor Castle towering across the river as the train bends slowly in from Slough.

No one who has ever taken his drowsy way from Shrewsbury into Wales can forget the two noble hills on either hand which are called the gates of Montgomeryshire.

The Southerner on his way to Liverpool always feels that he has burnt his boats and ventured for good or ill into the alarming north as his train crosses from Runcorn to Widnes with the ship canal far beneath him. This is a view not perhaps essentially beautiful, to which no power station would be grossly inappropriate; but in its sombre, almost murky magnificence it is second to none.

The traveller who has passed Didcot on his way to Swindon gazes out of the window at the line of chalk hills on his left which culminate in White Horse hill and feels for certain that the West is now holding out welcoming hands to him.

And the curious thing about these views and others like them is that among all



"See what happens when you bring your wife on the 8.15—she has Watson's seat, Watson has Brown's, Brown has Smith's, Smith has mine, and I have to stand!"

[Reproduced by permission of the proprietors of "Punch"]

their lovers few have ever seen them save in that transient glance through glass.

The voyager by road may be seduced by, to use Mr. Pecksniff's phrase, "the siren-like delusions" of beckoning sign-posts.

But in a train he is tied to the conditions of his ticket and cannot cut loose from his luggage in the van.

Thus these views remain railway views, for ever loved but for ever unvisited, the more enchanting perhaps because imagination fills the valleys with unseen beauties and over the hills is the land of far-away. They are so fleeting that they cannot be summed up at will with any precision, but they return each time in a swift gust of memory when some landmark heralds their arrival.—Extracts from a "Fourth Leader" in "The Times."

* * *

RAILWAY TRAVELLING BY WIND

Since the opening of the Durham & Sunderland Railways, a novel experiment has been tried upon the line, which proves the practicability of railroad vehicles being propelled by wind. A temporary mast and sail were erected on a vehicle, which was set going at an easy rate. On the sail being trimmed to the wind, the speed increased to the rate of ten miles an hour. A train of five coal-waggons was afterwards attached but no additional sail hoisted.—From the "Mechanics Magazine" of October 8, 1836.

* * *

TAILPIECE

He who on railway trains would ride
Must virile be and free from pride—
With ribs of brass and feet of steel,
At least with toes that cannot feel
The impact of a heavy case;
A sense of humour must retain,
Ability to stand the strain
And keep a smile upon his face.

The day of privilege has passed,
Except for those of special caste,
And all who clamber on aboard
Are units in a milling horde
No matter name or station;
The traveller, both "third" and "first,"
Is packed until he's nearly burst,
All in the same relation.

Journeys once provided pleasure.
Long ago, in days of leisure,
One sat in comfortable ease
In corner seat with room for knees—
'Twas better than arrival;
But now, arriving very late,
We stagger to the station gate
So grateful for survival.

A. E. C.



Rule book illustrated—Employees must not engage in private trade

August 11, 1944

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Cape Western Electrification

Expenditure by the Railways & Harbours Administration on the Cape Western System during 1944-45 will include £25,000 towards the electrification of the Belleville-Touws River line, including the Stellenbosch loop, and £1,000 of the total of £10,000 allocated for the conversion of the Cape Town-Woltemade avoiding line. Electrification of the Eersterivier-Strand line is to cost £73,000, of which £7,500 will be spent during 1944-45.

Works at Cape Town

Expenditure at Cape Town during the present financial year is to include £5,000 towards a new coach yard, the ultimate cost of which is expected to be about £100,000. New goods facilities are to absorb some £732,000, of which nearly £20,000 has been spent so far, and of which a further £30,000 is allocated for 1944-45. The first £10,000 has been provided towards new offices and stores for the Catering Department; during the year, also, £5,000 in each case is to be spent on the new station and new railway hotel.

Other Works

The sum of £10,000 has been allocated for 1944-45 towards the quadrupling of the Cape Town-Maitland line, estimated to cost £130,000. Some £40,000 in each case is to be spent on marshalling yards at Belleville and Touws River, which are to be built at total cost of £275,000 and £156,000, respectively. Other expenditures during the present financial year will include £2,500 on the easing of curves on the Wellington-De Doorns line (total cost estimated at £200,000), and £10,000 on similar works on the De Doorns-Matroosberg section (estimated to cost in all £400,000).

NEW ZEALAND

Christchurch-Picton Main Line

A further stage in the construction of the main line intended to link Christchurch with Picton was marked on March 13, 1944, by the extension of the Picton (or northern) Section to Kaikoura, a point 98 miles south of Picton. There now remain only about 13 miles of trackwork—from Kaikoura to Oaro—to be completed before the line is open for through traffic. During the time the railhead of the Picton Section remained at Clarence, 75 miles south of Picton, and motor transport was used to link Clarence with Oaro, 106 miles north of Christchurch, the through journey of about 217 miles from Christchurch to Picton occupied 11 hr. 7 min. and the return journey, 11 hr. 19 min. Small 2-6-4 "Wf" class tank locomotives were used between Picton and Clarence, and, with the usual loads of between 150 and 200 tons, were limited to about 35-40 m.p.h. on favourable sections. The fuel capacity of these small engines is insufficient to enable them to work through trains on almost a 100-mile journey, and two class "A" Pacifics, recently converted to 2-cylinder simple propulsion, were transferred to Picton last year from the North Island. Turntables have been installed at Picton and Kaikoura.

Schedules Operated

The speed limit on the Picton Section recently has been raised to 45 m.p.h., and a noticeable acceleration of the through

services has been effected. No alteration has been made to the schedules south of Oaro. The through northbound journey now occupies 10 hr. 33 min. and the southbound, 10 hr. 49 min. The main cut in running times has been effected between Blenheim and Kaikoura, where the improvement over the 58 miles between Blenheim and Clarence has been to the extent of 15-20 min. The 80 miles between Blenheim and Kaikoura are allowed 3 hr. 20 min. southbound and 3 hr. 10 min. northbound, with 3 regular and 12 conditional stops. Some heavy grades, up to a maximum of 1 in 50, are encountered on this section, particularly between Blenheim and Ward, 30 miles.

Car Vans

In the New Zealand Railway rolling-stock classification, passenger carriages are classed as "A" and brake vans as "F." Until recently the only variations have been that a number of the larger carriages and vans which exceed the normal loading gauge limits in a few respects (thus necessitating special instructions regarding clearances) have been distinguished by being classified "Aa" and "Fa" respectively, but in recent years the number of carriages with a guard's compartment, now known succinctly as "car-vans," has been increasing considerably, a programme of conversion of certain old-type 47½ ft. carriages into car-vans apparently being well under way, and these vehicles are now distinguished by the classification "Af." All car-vans at Wellington appear to have been so reclassified since February last.

UNITED STATES

Increased Wagon Orders

The relaxation of restraint on wagon building by the War Production Board, and the restoration of liberty to build wagons of all-steel construction, has resulted in so large an increase of wagon orders by American railways that, whereas at the end of 1943 the number of wagons on order but uncompleted was 38,100, three months later the total had risen to 45,000. Of these, 28,400 were on order from outside builders and 16,600 from railway companies' shops. During March, 12,535 wagons were ordered, including 5,000 all-steel 50-ton bogie hopper coal wagons for the Chesapeake & Ohio Railway; 2,000 55-ton bogie box wagons for the Chicago & North Western Railway; and 1,000 55-ton box wagons and 1,000 55-ton hopper wagons for the New York Central System. Of the March orders, those for 10,210 wagons have gone to outside builders, and those for the remainder to railway companies' shops.

Laying 78-ft. Welded Rails

In pursuance of the lead which has been given in Great Britain in the welding of American 39-ft. rails in 78-ft and 117-ft. lengths, the Central Railroad of New Jersey recently relaid 2 miles of track with 78-ft. rails of the 130-lb. per yd. section, which had been welded in pairs at a depot by the Oxweld automatic pressure rail-welding process. The rails were obtained from the mill drilled at one end only for fishbolts, and squared at the opposite ends, so that buffing only of the end faces was needed to remove scale and dirt in preparation for welding. Transport from depot to site was on 65-ft. drop-end gondola wagons, each with an adjacent flat wagon; for lifting the rails, the crane was provided with a spreader which lifted each rail at two

points well apart, and so prevented undue sag. The weld itself provided an easily-seen centering point for the lifting.

Joints are staggered, in accordance with normal American practice; a mile of the test length has been laid with normal expansion gaps ($\frac{1}{8}$ in.), and the other mile has gaps increased in width to $\frac{3}{8}$ in. A slightly larger number of rail anchors (32 to a 78-ft. length against westbound and 24 against eastbound traffic) has been applied; in half the test length the spacing of the anchors is even, but in the remaining half the principal concentration is towards the centres of the rails. The gang of 108 men used in the relaying operation varied in minor respects only from the normal practice of the Central of New Jersey. The larger number of men needed for handling the rails of increased length and weight was roughly balanced by the smaller number needed to apply and bolt up the fishplates. Of the 270 78-ft. rails used, half were laid in a single working day; but because of inability to obtain adequate possession of the track, the other half required two days.

Glass Blocks for Engine Sheds

The replacement of broken-glass is always a considerable item in the maintenance of engine sheds, and in the United States glass bricks are finding a considerable vogue as substitutes for ordinary windows in these buildings. In addition to the attraction of their modernity, these blocks are proving economical in the reduction of maintenance costs. Recently the New York, New Haven & Hartford Railroad has replaced the windows in four of its engine-sheds by glass bricks and the railway is now contemplating the same substitution in the sheds at Providence and East Hartford, and in its workshop buildings at Readville.

SPAIN

Madrid Underground in 1943

Final particulars now available show that the number of passengers conveyed over the Madrid Metropolitan Railway in 1943 amounted to some 281,000,000, compared with 258,000,000 in 1942. The average daily receipts were 138,176 pesetas against 126,300 pesetas in 1942; and the average number of passengers a kilometre was 12,400,000 (11,400,000). Working expenditure amounted to 34,150,000 pesetas, compared with 29,100,000 pesetas. A dividend of 8·3 per cent. (9·6 per cent.) was paid. That traffic is still on the increase is indicated by the fact that receipts during the first quarter of the current year were 13,700,000 pesetas, compared with 12,600,000 pesetas for the same period of 1942. On December 31, 1943, a record total of 1,009,095 journeys was recorded.

It is reported that some 90,000 passengers a day are travelling over the new Argüelles-Goya line, opened on March 23 last. (The line was described briefly in *The Railway Gazette* of July 7.)

SWITZERLAND

Doubling of Olten-Solothurn Line

As a first step towards the doubling of the Federal 21-mile section of main route between Olten and Solothurn, which is to be undertaken as part of the scheme for providing employment, a second track is to be laid from Olten to Oensingen, a distance of 11 miles, under the 1944 construction programme. No decision has been taken yet in connection with the proposed reconstruction of the Olten goods and marshalling yards, as the plans are not yet complete; it is hoped that they will be ready by the end of this year.

Unit Tampers for Packing Sleepers

The Missouri Pacific System has 734 unit power-operated tampers for minor surfacing operations.

OF the various forms of power assistance that are now being applied to permanent way maintenance, by far the most extensively developed are the appliances for the packing of ballast under sleepers, usually known as tamping. In the United States considerable progress is being made towards the equipment of all section gangs, especially on important main routes, with power tampers; the Missouri Pacific System, to take an example, which first introduced such tools experimentally in 1940, has in four years provided 350 section gangs, each responsible for an average of 12 miles of track, with two power tampers each as standard equipment. On many sections the tampers are taken out daily, and are used for routine spot tamping of sleepers and for minor surfacing operations. As compared with previous manual methods, it is calculated that with this assistance the work capacity of each man is roughly doubled; also the work done is more uniform in quality, and sleepers so packed prove themselves capable of standing up better under traffic than those packed by hand. When the section gangs accustom themselves to the handling of power tampers, they prefer them to tamping by hand.

The unit power tampers in use on the Missouri Pacific are of the Tytamper type, which are manufactured also in Great Britain, for use in European countries, by Pegson Limited, of Coalville, Leicestershire. As compared with multiple-tool power tampers, used for out-of-face surfacing (the Missouri Pacific has 45 8-tool, and 43 4-tool electric or pneumatic outfits of this description, some mounted on caterpillar tractors), the advantage of the unit tamper, even though its capacity be more limited, is its portability. Each Tytamper can be carried complete by one man.

On the job, as previously mentioned, the unit tampers are used chiefly for spot tamping, and in particular for picking up low joints and for tamping ties that have been renewed. There is no necessity to remove ballast before tamping, as it is found that the tamping bar readily works its way down through the ballast to the underside of the sleepers, and the tampers also lift the sleepers up solidly against the rail. At times out-of-face surfacing, with a light lift, has been done with unit tampers, by combining two or more section gangs with their equipment. On the Missouri Pacific good deal of the ballast is gravel, with an average proportion of 60 of stone to 40 of sand, for which a $\frac{3}{4}$ -in. \times 5-in. saw-toothed tamper head is used; but lines carrying the heaviest traffic are ballasted with broken stone, for this the tamper is fitted with a $\frac{3}{4}$ -in. \times 3-in. flat head. Section gangs normally consist of a foreman and five labourers.

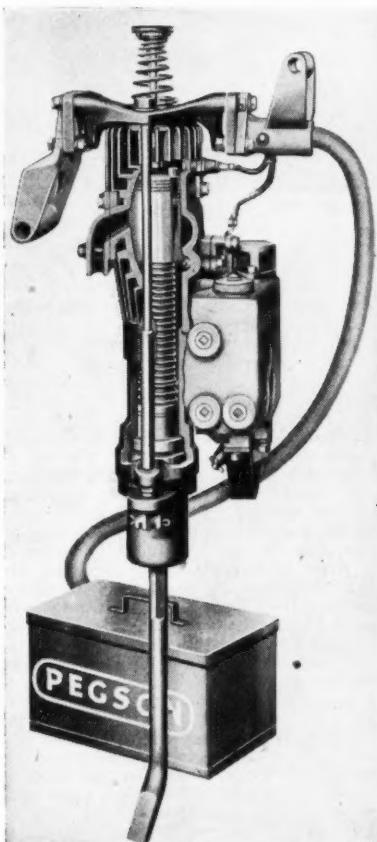
In sending out the unit power tampers, the greatest care is taken to instruct foremen in their use. With each set of equipment an instructor goes out; one of the machines is completely dismantled, and the foreman concerned is instructed as to the purpose of each part, and how to adjust and re-assemble it. It is a general instruction that each tamper shall be overhauled at approximately two-monthly intervals. This involves dismantling, checking the condition of all

wearing parts, checking the tension of the engine spring, and, if necessary, renewing the piston rings. In the ordinary course, an hour or less suffices for overhaul, which requires only the simplest tools, and can be carried out at a time when bad weather is holding up outdoor work. From time to time travelling maintenance men who look after all power track equipment, inspect the tampers, and take the opportunity of discussing their condition and working with the foremen. They also make any repairs that are beyond a foreman's skill or ability.

Much of the success that has attended

gallon of petrol, or 1 to 16; on the Northern lines the proportions are 1 gal. of SAE-40 oil to $12\frac{1}{2}$ gal. of petrol, and with this mixture in the North, it is found that there is less need for the use of a solvent.

As to the supply of electricity for ignition, some of the tampers are provided with magnetos, and on sections equipped with automatic block signalling it is possible to obtain current from the signal circuits. In the latter case, the section foreman is equipped with a rectifier charger, usually located at a signal relay box or some other convenient point. But on sections which have not access to signal current, the equipment provided for the purpose is a small portable charger with a $\frac{1}{2}$ -h.p. petrol engine and a 6-volt generator, which is used once or twice a week, according to the number of hours worked by the tampers. The charger is installed



Above : The Tytamper equipment being carried by one operator

Left : General view of the unit power tamper

on the wall of the section tool-house, and 4 to 6 hr. is required for recharging the accumulators. The latter are of a 6-volt 120-amp.-hr. type, whether charged from a signal circuit or from one of the petrol-driven generators.

The worst wear in the tampers is sustained by the tamping bars, the heads of which become worn by abrasion against the ballast. These worn bars are sent to a central reclamation plant, where the heads are restored by welding. The full section is rebuilt with mild steel rod, and the wearing surfaces are coated with from $\frac{1}{16}$ in. to $\frac{1}{8}$ in. of a self-hardening, abrasion-resistant steel. After reconditioning, the bars give from two to three times the service that they did in their new condition; on the Northern lines of the Missouri Pacific, this surface-hardening treatment is now applied to new as well as to worn tamping bars. The Missouri Pacific System now has a total of 734 power unit tampers in service.

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New Scottish Traffic-Control System, L.N.E.R.

Telephone circuits have replaced single needle telegraphs



A MODERN traffic-control system, covering the principal lines of the former Great North of Scotland Railway, has been installed recently by the L.N.E.R. A network of up-to-date telephone circuits, similar to those in use on other parts of the company's system, serves an area in which hitherto all communication with outlying stations and signal boxes had been by means of single needle telegraph.

The traffic-control office is manned continuously, and at all times the controllers can obtain contact with signal boxes, offices and locomotive depots.

There are two types of circuits connected to the control: (1) code ringing providing for communication between signal boxes and so on, and (2) selective ringing, used solely for conversations between the controllers and the various stations on the circuit. On the latter circuits, the controller "dials" the station required and the bell at that station only rings. The noise of bells is very undesirable in a control office, and the glowing of a white lamp is used to indicate an incoming call on the controller's panels. Green light indications are given to show controllers when the line is engaged by another person at the control. A Post Office telephone is provided, which may be used as an alternative means of communication in an emergency. Each of the two controllers has in front of him a diagram of the area under his control, a telephone keyboard containing the lamp indicators mentioned above, switching keys, ringing buttons, and a dial for ringing stations on the selective circuits. There is also a graph on which the running of trains is recorded, which enables the controller to see at a glance the position of every train in the section of line which comes under his jurisdiction.

In addition to the keyboards on the two controllers' tables, there is a third in the Traffic Superintendent's trains office. Six code ringing omnibus circuits are connected to all three keyboards, but the two selective ringing circuits are terminated on the controllers' keyboards only. Each line on the keyboards is provided with a "connect" key, to switch the con-

troller's telephone to the line, a white "calling" lamp and a green "engaged" lamp. A common plunger is used for code ringing on the inter-communication omnibus circuits and a Post Office-type dial for ringing on the selective circuits. The keyboards are provided also with "coupling" and "uncoupling" keys, the purposes of which are detailed below.

There are three omnibus circuits covering the principal main line in the area, but relay switching units at two intermediate stations, remotely controlled by the operation of the "coupling" key at the control, permit switching in tandem so that the controller can ring and speak to any station on this length of line. The operation of the "coupling" key sends a pulse of direct current over the line loop succeeded by a pulse of alternating current over both lines in parallel and earth. At the coupling unit a relay bridged across the lines responds to the d.c. pulse and another relay with associated full wave rectifier, connected between the lines and earth, operates to the a.c. pulse. The controller uses the coupling key once to operate the switching unit at the first intermediate station only, and twice to operate the switches at both intermediate stations. The code of the required station can be rung by turning a "reverse ringing" key and depressing the code button. The code rings then are received only on the circuit to which the required telephone is connected. On restoring the connect key at the end of a conversation, the coupling units are restored to normal by uncoupling signals, automatically sent to line; these are in the reverse order, i.e., an a.c. pulse succeeded by a d.c. pulse. Uncoupling can also be effected by operation of the "uncoupling" key if required. Any station on these circuits can call control by depressing a red button on his telephone.

Remotely-controlled coupling is also arranged on the selective line at one of the main-line stations to enable the control to connect to the omnibus circuit to a branch line terminal. The coupling unit in this case comprises a uniselector as used in automatic telephone exchanges

together with the necessary group of relays, all housed in a small case in the signal box. When the code allocated for the coupling operation is dialled, the selective circuit is connected to the code ringing omnibus line. The controller then rings the code of the required omnibus station consisting of long or short rings or a combination of these. A vibrating relay interrupts these at dial impulsing speed, and the signal transmitted over the selective line is, therefore, a series of long or short periods of dial impulses, which operate a line relay in the coupling unit at the main-line station previously referred to. The line relay operates a slow release relay which converts the impulse codes to long or short d.c. pulses, and at the same time relays them to the omnibus line. Stations on the omnibus circuit call the control by means of the red key and the coupling unit passes the "connect" polarity to the selective line.

The omnibus telephones are of the usual railway wall pattern, fitted with 5,000-ohm magnetically-polarised line relays and two ring buttons, black for inter-station working and red to call control or Traffic Superintendent's office; the latter office is called if the red button is held in for five seconds. The selection of the two red button calls is effected by the operation of a vibrating relay at the control which operates to long or short calls, but lights the Traffic Superintendent's keyboard call lamp only if its associated line relay is operated when the vibrating period ends. If the line relay is released before the vibrating period ends (calling button depressed for less than five seconds), the controllers' keyboard call lamps light. The selective telephones are equipped with standard uniselectors, and, by means of a linking panel, can be set to respond to any code. The instruments are accordingly fully interchangeable. The line relay which responds to the dial line impulses is magnetically polarised and of 10,000 ohms resistance. The relays operate with 5 milliamperes; the current is set by means of a variable ballast resistance. The two-digit numbering system is used, tens and units.

Provision is made also for group or general calling if desired. Way stations call the control by operation of a ring key, and no difficulty has been experienced in calling the control over a 100-mile line with the 9-volt battery, which is used also to operate the local uniselector and relays and so on. A useful feature of the selective telephones is that omission to replace the receiver on the switch hook after the previous call will not prevent the bell ringing the next time the controller rings that station; the tripping of the ringing is effected by the operation of a key on the controller's telephone. All way-station instruments are provided with the usual lightning protectors, heat coils and fuses. The apparatus rack at the control office contains the omnibus and selective line termination relay sets, selective line code transmitting apparatus and a vibrating relay set for generation of the a.c. coupling signal current.

Trickle-charged lead acid accumulators are used at the control office to supply all local apparatus and for impulsing and ringing out to lines.

The telephone control apparatus was supplied by the General Electric Co. Ltd. The work was carried out by Mr. W. Y. Sandeman, Engineer, Edinburgh, under the direction of Mr. J. C. L. Train, Chief Engineer, to meet the requirements of Mr. R. Gardiner, Superintendent, Scottish Area, L.N.E.R.

August 11, 1944

THE RAILWAY GAZETTE

135

New Australian 4-6-2 Express Locomotive***Locomotives built at Sydney for the New South Wales Railways have cast-steel beds and roller-bearing axleboxes***

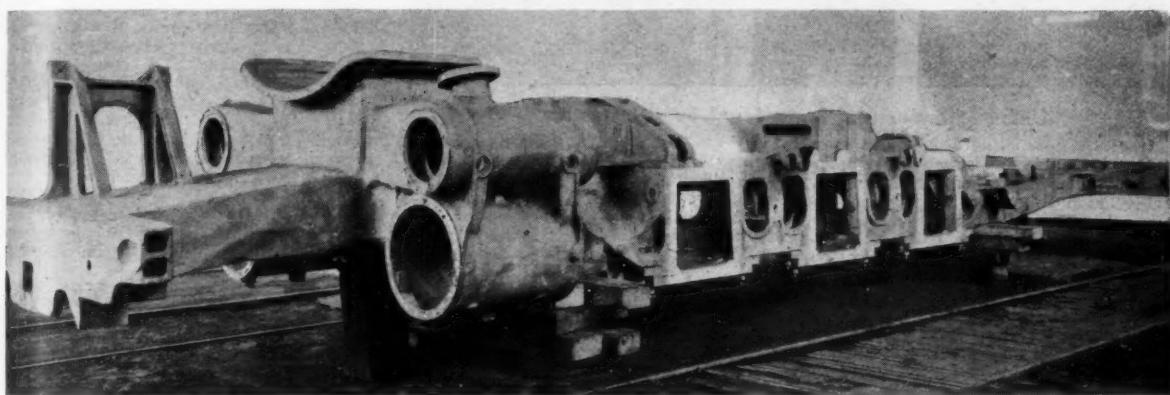
THE first of a series of thirty 4-6-2 type standard gauge locomotives introduced for fast passenger traffic operation by Mr. T. J. Hartigan, C.M.G., Commissioner for Railways, New South Wales, was recently completed at Sydney and placed in service. These locomotives, known as the "C.38" class, embody the most modern practice in locomotive development; designs were prepared in the Mechanical Branch drawing office under the direction of Mr. H. Young, Chief Mechanical Engineer. Compared with the "C.36" class, 4-6-0 type locomotives, introduced in 1925, these locomotives show several improvements, notably the application of self-aligning roller bearings to all engine and tender

The piston valves are of the trick-ported type developed for increased port opening on the admission side at short cut-off when travelling at high speed. Care was taken to eliminate weight though leaving sufficient metal for strength.

The pistons are of forged steel with cast-iron bull rings for housing the piston rings and supporting the weight of pistons in the cylinders. Mechanical lubrication is provided by a six-feed lubricator operated from the expansion link; this supplies oil which is atomised by an independent saturated-steam supply into the steam pipes and also into the bottom of the cylinders. In this way lubrication is supplied to the cylinders continuously while the engine is running, whether the

coupled axles are hollow bored to 3 in. inside dia. to reduce weight. The axleboxes are made of cast steel with renewable manganese steel liners for the guides. All engine and tender axleboxes are fitted with removable self-aligning roller bearings which have dust seals and are grease lubricated. Axlebox guides of the leading-bogie and coupled axles are oil lubricated by a six-feed mechanical lubricator positioned adjacent to the steam-chest and cylinder lubricator; this is also operated from the expansion link. The feeds are divided by a device which accurately distributes equal quantities to each point.

The wheels of both engine and tender bogies are of the solid cast-steel disc pattern with detachable tyres. The coupled and trailing-truck wheel centres are of the disc variety with hollow box spokes and cored balance-weight pockets in the driving wheels to accommodate the correct quantity of lead, as determined by a dynamic balancing machine. Each



One-piece cast-steel bed 43 ft. long and 19 tons in weight

axles, a wide Belpaire firebox in a boiler of considerably greater capacity, and moderate streamlining.

Negligible repair expenditure to frames has been incurred since the adoption in 1928 of cast steel beds for the "D.57" class, 4-8-2 type heavy-goods locomotives; therefore it was decided to apply this type of frame in preference to the plate built-up construction. The cast-steel bed weighs 19 tons and is 43 ft. long. The one-piece casting includes cylinders, valve chambers, boiler front-end support, main air reservoir, brackets for compound air compressor, and motion and boiler expansion plates.

The two outside cylinders and valve chambers are horizontal; the vertical centre line of the cylinders is located 1 in. to the rear of the bogie centre to obtain the necessary clearance for the bogie wheels. Stepped cast-iron bushes are pressed into the cast-steel cylinders. Cylinder-steam distribution is controlled by two sets of Walschaerts valve gear connected to 12 in. piston valves which have a maximum travel of $\frac{1}{2}$ in. Considerable care was given in the design of steam and exhaust passages to give a free flow to the steam, and thus minimise the pressure drop between superheater and cylinders, and also to obtain low back pressure during exhaust. The exhausts from the piston-valve chambers are combined in the smokebox-saddle portion of the integral bed casting to permit the exhaust being emitted from the one exhaust pipe in the smokebox.

regulator is open or shut. Feeds are also provided to the valve chambers.

The cast-steel crossheads are of the detachable slipper type. The gudgeon pins are provided with a spherical bearing to prevent twisting of the connecting rod when the engine negotiates curves and track irregularities. The connecting and coupling rods are manufactured from medium manganese steel and are fluted. The big end is solid and provided with a bronze revolving bush. Eccentric loading of the coupling rods has been eliminated by designing the rods without horizontal offset. Pin-feed oil lubrication has been adopted for the crank-pin bearings. Gudgeon pins are lubricated with a special grease to suit high bearing pressures.

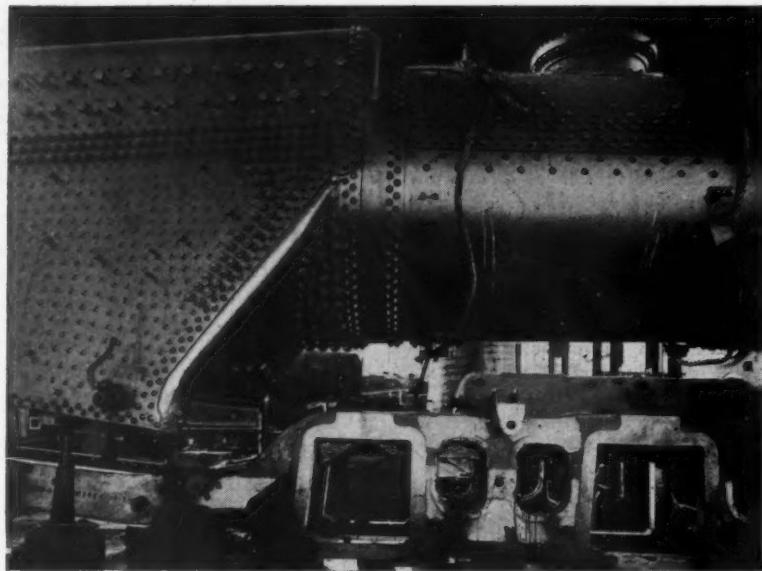
Considerable care was taken in designing the compensating and spring gear to ensure smooth riding at high speeds and keep within track-loading limitations. The coupled-wheel and trailing-truck axles are compensated, an arrangement which, in conjunction with the support given by the four-wheel engine bogie, gives the advantage of three-point suspension. The overhung laminated springs which form the compensated system, also the equalising springs of the leading bogie, are manufactured from silicon-manganese-steel, oil quenched. The spring-gear anchorage at both ends of the rear-spring system is provided with auxiliary coiled springs. All the equalising-beam pins are grease lubricated and spring pins are oil lubricated.

All axles are made of carbon steel and

driving wheel was revolved in this machine at a speed equivalent to 90 m.p.h. for final dynamic-balance adjustment of the revolving weights acting at each crank pin. No counterbalancing has been provided for the reciprocating weights. Tyres on the coupled wheels are secured by retaining plates which are riveted to the wheel centre and fit into a machined groove in the tyre; Gibson ring-fastenings are used on other wheels. In the all-steel Belpaire-type boiler, high-tensile steel is used for barrel plates to assist in keeping the weight down to a minimum.

An interesting feature is the connection between the barrel and the firebox shell. The difficulty of applying a Belpaire crown to a boiler with an extended throatplate, of the type usual with a combustion chamber, was overcome by fitting what has been called a "Belpaire ring," 1 ft. $3\frac{1}{2}$ in. long. This ring is flanged from a flat plate and has no weakening longitudinal seam; it is shaped at the top similar to a conventional Belpaire throatplate, but is cylindrical below the boiler centre line.

The stays are also of high-tensile steel which permits smaller diameters to be used, thus saving weight and aiding flexibility. With the exception of wallstays in the top three rows, and a limited number in the "breakage" zones, all stays are of the rigid type. The method adopted in applying the longitudinal and transverse stays, which are screwed through the plate and have no back-



Union of firebox and boiler barrel by Belpaire ring

nuts, will enable any stay to be removed without disturbing others in the vicinity.

Five arch tubes are fitted in the firebox which has a combustion chamber 2 ft. 9 in. long. The grate is of the single-unit type supported on carriers which are grouped in four sections for individual shaking or dumping; they are operated by a single lever in the cab. The movement of this lever is controlled and limited by an arrangement of locks and stops, and by engaging the appropriate operating lock any one or two sections of the grate may be rocked or dumped as required. The individual units permit easy replacement of burnt sections. A single-hopper ashpan is fitted; this has dampers at each side, also flushing gear to dampen the ashes and prevent ash accumulation on the sides of the ashpan.

Steam is collected by a tangential steam separator in the dome; flow is controlled by a multiple-valve regulator on the saturated-steam side of the superheater header. The superheater elements are bifurcated. Boiler pressure is limited by three 3½-in. muffled pop safety valves; other fittings include two 11-mm. live-steam injectors positioned below the footplate on the right and left sides, also three blow-off cocks, one on each side of the firebox and the third on the first ring of the boiler barrel.

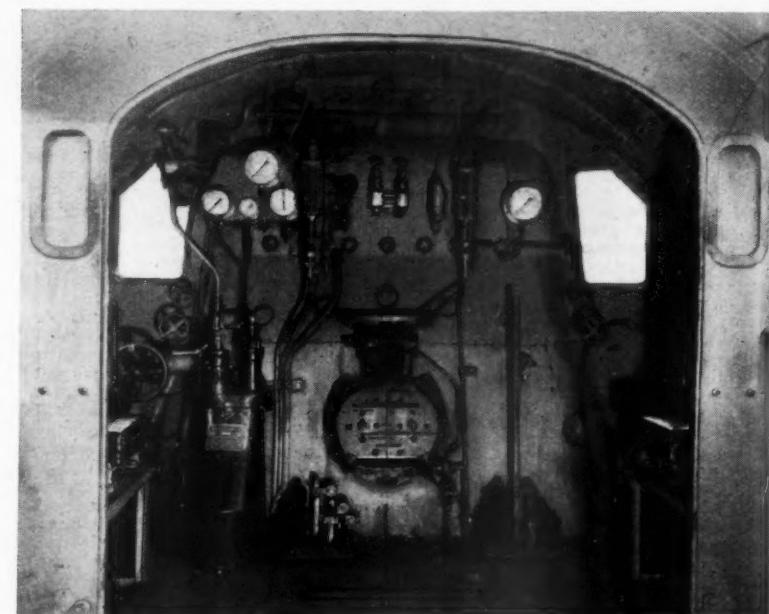
In the smokebox, which is self-cleaning, a streamline casing is fitted around the blast pipe and along each side of the smokebox interior covering the steam-pipes. The streamlining is designed to prevent the formation of ash pockets and to improve the draught.

A 7-in., 80-cu. ft. per min. air compressor is mounted on a bracket cast integral with the engine frame; its location is in front of the smokebox on the right side.

A steam turbo-driven electric generator is fitted in a compartment under the lantern top on the left-hand side for general illumination purposes. The long-focus headlamp is fitted centrally and recessed into the conical front sheathing of the smokebox. Electric lighting has been provided also for cab illumination, water gauges, engine and tender marker

lights, and also under the footplate on each side of the engine to facilitate inspection of the motion at night.

The cab is of all-welded steel construction; the roof inside is insulated with wood lining. Sliding glass windows with



Footplate view showing neat and simple controls

rattle-proof clamps are provided on each side. Forward-vision windows permit unobstructed view of the road by the engine crew in a sitting or standing position; they are flush with the spectacle plates which are sloped to divert the draught from entering the side windows when travelling at high speed. Leather-cushioned seats with back rests have been provided for the crew.

On the driver's side are the regulator handle, precision power-reverse control,

brake valve, and pneumatic control valves for cylinder cocks, sand gear, and steam-chime whistle; all these are conveniently situated for operation from a sitting position. The regulator rod is encased in the handrail and is operated by pull-push movement. All pin joints in the rods and levers are grease lubricated. Westinghouse A6-E.T. brake equipment is used for the engine, tender, and train.

The firedoor is of the butterfly-operated type actuated by a foot treadle conveniently placed on the cab floor. Two steam pressure gauges are fitted, one on each side of the firebox, and a steam drifting gauge, connected to the cylinder steam pipe, is mounted in front of the driver. The needle of this gauge indicates that the correct quantity of steam is admitted by the pilot drifting valve to the cylinders at atmospheric pressure to obtain smooth operation of the motion at all coasting speeds with the power-operated reverse gear in full forward position. A speed indicator and recorder is located in front of the driver below the vision window.

Two water gauges are fitted on the boiler backplate; these are provided with steam connections terminating at seatings on the firebox-shell crown. The gauge on the driver's side is of the still-water type, equipped with three test cocks in addition to the gauge glass. A coal sprinker, supplying hot water from the injector delivery pipe, provides facilities for cab cleaning and for watering coal to prevent dust.

A special duplex valve is fitted on the boiler backplate, just below the water level, for the connection of steam cleaning

hoses. At a lower level, a water-sampling cock is provided for use in checking the salt concentration of the boiler water.

Provision is made to ventilate the cab by air ducts in front of the spectacle plate. These ducts intercept the stream of clean air from the side of the lantern top and direct it into the cab interior over the top of the boiler backplate. Sliding ventilator plates allow for individual control by the engine crew.

The tender is of conventional design and

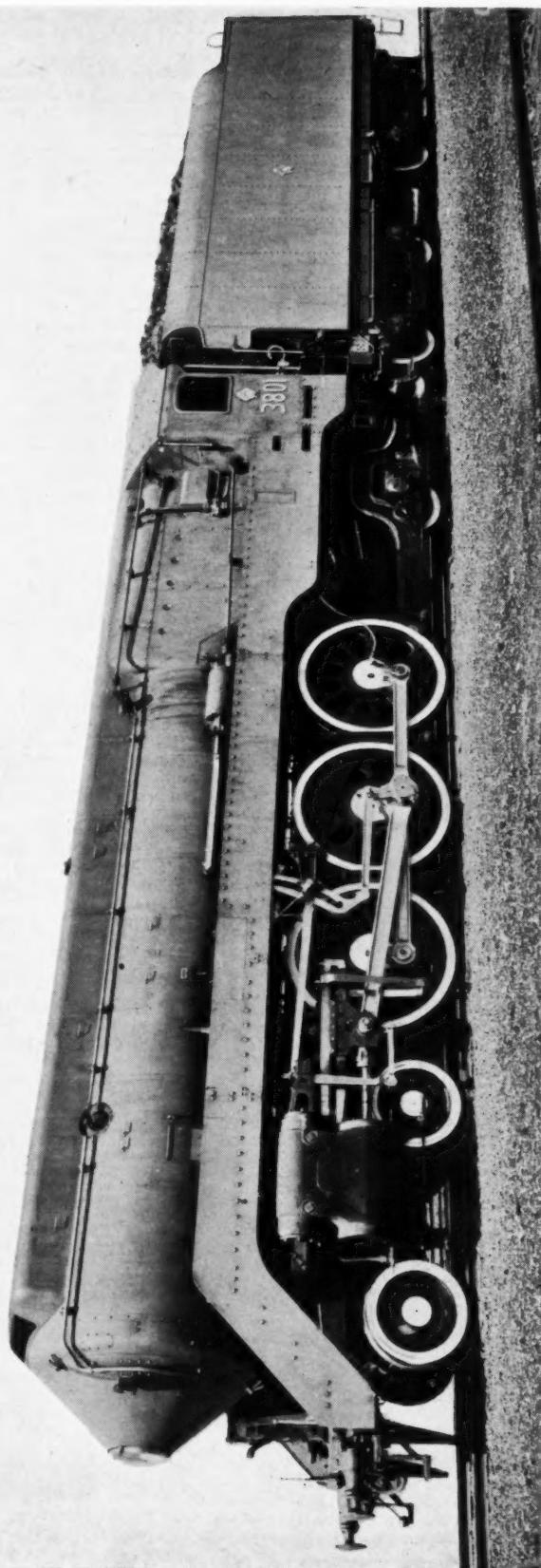
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General view of express locomotive built at Sydney for the New South Wales Railways

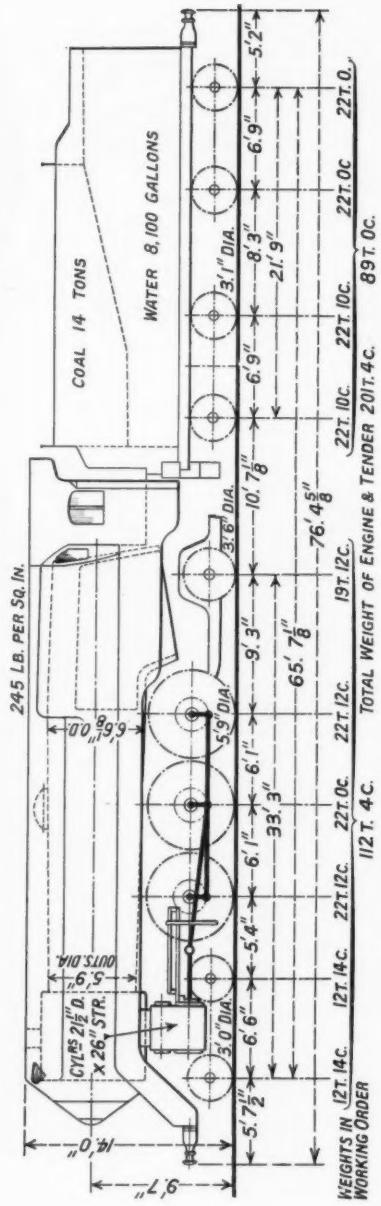


Diagram giving principal dimensions and axle loads

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provides for a coal capacity of 14 tons and 8,100 gal. of water. The coal capacity is ample for the through run from Sydney to Albury (400 miles) and the water capacity permits taking water at stopping places where treatment plants are provided. The coal bunker and tank unit, which is removable, is carried on a built-up under-frame fabricated from rolled-steel sections, pressings, and castings.

Tender bogies are of the four-wheel equalised type with swing bolsters and one-piece steel-casting frame. Clasp brakes are fitted to all wheels, but the hand brake is operated from the tender platform on the front bogie only. The Westinghouse brake equipment includes a hydrostatic control valve which automatically regulates the brake force on the tender wheels to prevent skidding when water loads diminish.

A diaphragm-type pressure gauge, graduated in gallons, is fitted on the front plate of the tender. The reading on this

gauge indicates the quantity of water in the tank.

The underframe is equipped with friction drawgear and transition drawhook at the rear end. On the driver's side, a hand-operated tablet exchanger is fitted which permits lowering and raising the exchanger as required. Engine and tender are coupled by twin drawbars with a radial adjustable buffer.

After preliminary trials, the first of the five locomotives was placed in service for a durability service test over a period of one month, during which an aggregate distance of 12,500 miles was covered in hauling express passenger trains on the Northern and Southern divisions of the system. During this service test, loads of 521 tons behind engine and tender were hauled between Sydney and Albury (400 miles), without change of engine and unassisted except over the section Goulburn to Wagga Wagga, where the ruling grade is 1 in 40. Steam pressures were well maintained on the Melbourne Limited

timetable, and smooth running was obtained at all speeds up to the maximum of 75 m.p.h.

Principal particulars of locomotive

Cylinders, dia. ...	...	...	...	21½ in.
" " stroke	...	...	...	26 in.
Piston valves, dia. ...	...	...	...	12 in.
" " max. travel	...	...	...	6½ in.
Coupled wheels, dia. ...	...	...	5 ft. 9 in.	
Evaporative heating surface, tubes	...	2,362 sq. ft.		
" " firebox	...	252 sq. ft.		
Superheating surface ...	...	2,614 sq. ft.		
Combined total	...	3,369 sq. ft.		
Firegrate area ...	...	47 sq. ft.		
Boiler pressure, per sq. in. ...	...	245 lb.		
Tractive effort (at 85 per cent. boiler pressure)	...	36,200 lb.		
Adhesion weight ...	...	67½ tons		
Weight of engine in working order ...	...	112½ tons		
Water capacity of tender ...	...	8,100 gal.		
Coal ...	...	14 tons		
Weight of tender, full ...	...	89 tons		
Total weight of engine and tender ...	...	201½ tons		
Gauge of track ...	...	4 ft. 8½ in.		

We are indebted to Mr. H. Young, Chief Mechanical Engineer of the New South Wales Railways, for the particulars from which this article has been compiled.

Single-Operator A.C. Welding Unit

A transportable set by Johnson & Phillips Limited



TO enable the small user to have facilities for welding in his own works, a transportable single-operator a.c. welding unit has been developed by Johnson & Phillips Limited, Charlton, London, S.E.7. As shown above, the set is mounted on a three-wheel trolley fitted with two 6-in. dia. wheels and a swivelling caster, and is transportable by pram-type handles. Lifting eyes are provided for slinging.

An air-cooled moving-coil regulating transformer, with an auxiliary choke connected in series, is arranged for connection across two lines of a three-phase,

50-cycle incoming supply, and is designed to give smooth, variable and continuous hand-welding currents of 30 to 250 A in two ranges of 30-60 A, and 60-250 A with the standard 5-yd. length of cable. Hand-links are provided for the selection of appropriate voltage tappings. The welding rating is 22.5 kVA, and the continuous B.S. rating, based on a diversity factor of 70 per cent., is 15.75 kVA. Core and windings are enclosed in a sheet metal housing fitted with louvres for ventilation.

By rotating the operating handle, the primary winding is moved towards or

away from the secondary winding, so that the inherent reactance of the transformer is variable over a wide range. When the handle is turned, the welding current available at the welder's plugs is indicated on an adjacent scale. Two welder's plugs are provided, one for the low range current supply and the other for the high range. A single socket is supplied as standard for the welder's lead.

Two cable-sockets are solidly connected to the housing for earthing the set and for an earth connection from the workpiece. A 60-A D.P. switch-fuse is included to isolate the transformer from the main supply and brass packing-glands are fitted to accommodate the incoming cables.

When required a weatherproof condenser for power-factor improvement can also be fitted. Accessories supplied with the unit include electrode holder fitted with 5 yd. T.R.S. cable, welder's screen, observer's screen, set of glasses for screens, chipping hammer, wire brush, pair of leather gloves, and a 5-yd. length of single-core V.I.R. cable fitted with an earth clip.

The entire unit weighs 530 lb. and is built to comply with the appropriate B.S.S. and Home Office regulations.

NEW ZEALAND RAILWAY CORRESPONDENCE SOCIETY.—A group of railway enthusiasts has formed the nucleus of a body known as the New Zealand Railway Correspondence Society, the objects of which are to facilitate the interchange, between railway enthusiasts and students, of information and comment concerning the design, construction, operation, and development of New Zealand and other narrow-gauge railways and tramways, and their locomotives and other equipment, and to foster an intelligent interest in railways generally. At present, the main activity of the society is the production of a duplicated journal called *The New Zealand Railway Observer*, which is to be published six times a year. The subscription rates are 10s. per annum for New Zealand members, 5s. for overseas members, and 3s. for school students. The Honorary Editor is Mr. T. A. McGavin of 30, Plunket Avenue, Petone, New Zealand, who is also Acting Secretary. We congratulate the founders of this society on their enthusiasm, and also upon the excellence of the first number (dated May, 1944) of their journal.

RAILWAY NEWS SECTION

PERSONAL

L.M.S.R. Staff Changes

The London Midland & Scottish Railway announces the following staff changes:

Mr. Ashton Davies, C.V.O., O.B.E., Vice-President, retires on August 31, and will be succeeded by Mr. T. W. Royle, M.B.E., Chief Operating Manager.

Mr. S. H. Fisher, deputy to Mr. Royle, has been appointed Chief Operating Manager.

Mr. A. F. Bound, Signal & Telegraph Engineer, retires on August 31, and Mr. W. Wood, Assistant Signal & Telegraph Engineer, succeeds him.

Mr. H. V. Mosley, Chief Officer for New Works & Parliamentary Business, retires on August 31.

L.N.E.R. APPOINTMENT

The L.N.E.R. announces that Mr. M. D. Thompson, Acting Assistant District Goods & Passenger Manager, Cambridge, has been appointed Acting District Goods & Passenger Manager, Cambridge, on the retirement of Mr. J. P. Allix.

Viscount Davidson has been elected President of the Engineering Industries Association. He is a Director, among other companies, of the Buenos Ayres Great Southern Railway Co. Ltd., and Buenos Ayres Western Railway Limited.

Brigadier James Storar has been appointed a Director of the Central Africa Railway Co. Ltd., Nyasaland Railways Limited, and Great Western of Brazil Railway Co. Ltd., in place of the late Mr. N. B. Dickson.

As the result of a recommendation made by the Priory for Wales, Mr. H. J. Peacock, Assistant Superintendent of the Line, Cardiff, Great Western Railway, has been admitted to the Order of St. John of Jerusalem in the grade of Officer (Brother). Mr. Peacock is Divisional President of the Whitchurch Ambulance Division of the St. John Ambulance Brigade, and for many years has taken a keen interest in the G.W.R. Ambulance Movement.

Colonel J. D. White, Deputy General Manager, South African Railways & Harbours, has been awarded the O.B.E.

Mr. James Lockhart, M.Inst.T., who, as recorded in our August 4 issue, has retired, on account of ill-health, from the position of Traffic Manager, Great Northern Railway (Ireland), joined the

way Clearing House, which he organised, and later was appointed Manager. During that period he was Secretary to Chinese traffic and accounts conferences, and was a delegate of the Chinese railways to international traffic conferences held in the Far East. On the collapse of the Peking Government in 1928 he was transferred to Nanking as Adviser to the Through Traffic Administration attached to the Ministry of Communications of the Chinese Nationalist Government; and he was transferred to the Ministry of Railways on its organisation in October of that year. He later was appointed to take charge of the Traffic Division in the Ministry, and was responsible for the supervision of traffic working on the Chinese railways. He organised a Bureau of Railway Statistics, and later was promoted Adviser to the Ministry. Mr. Lockhart was appointed Traffic Manager, Great Northern Railway (Ireland), in 1931.

MAJOR OSCAR LOEWENTHAL

Over one hundred of the principal executives of the Buenos Ayres Great Southern and Buenos Ayres Western Railways met at Plaza Constitución Station, Buenos Aires, on June 30, to bid farewell to Major Oscar Loewenthal, who has retired from the General Managements of those companies. (A portrait and biography of Major Loewenthal, in connection with his retirement, appeared in our issue of July 7 last). The local boards were represented by Sir Guillermo Leguizamon, Mr. R. Stuart, and Mr. J. Calder Angel. Mr. H. N. Anderson, Acting General Manager, B.A.G.S.R. and B.A.W.R., bade Major Loewenthal farewell on behalf of the staffs, and paid tribute to his work. He said that arrangements had been made to send to Major Loewenthal a silver salver which would bear the signatures of all present. Major Loewenthal expressed his regret at leaving, and his appreciation of the co-operation received from the staffs.

In conclusion, Sir Guillermo Leguizamon, Chairman of the local boards of the two companies, paid tribute to Major Loewenthal.

We regret to record the death on August 1 of Mr. J. R. Thomas, Stationmaster, Kensington, Addison Road, West London Railway. He was formerly at Wellington, G.W.R. & L.M.S.R. Joint Line.



Mr. James Lockhart
Traffic Manager, Great Northern Railway (Ireland), 1931-44

former Caledonian Railway in 1896, and obtained experience in station booking, station working, accounting and other matters. He served later in the various departments of the District Superintendent's Office, Western District, Glasgow; he finally was passed as proficient in signalling and other aspects of railway work by the late Sir Guy Calthrop (then General Superintendent, Caledonian Railway), and was appointed Relieving Agent. From 1909 to 1918 he was in the service of the Peking-Mukden Railway; he was in charge of Passenger Audit in the Accounts Department, and assisted in organising interline traffic in China and international through traffic with the late Mr. J. E. Foley, then Traffic Manager. In September, 1918, Mr. Lockhart was transferred to the Ministry of Communications, Peking, as Chief Accountant of the Rail-



The farewell gathering to Major O. Loewenthal, General Manager, Buenos Ayres Great Southern and Western Railways. Behind the chair in the centre are (left—hands folded) Major Loewenthal and (right) Mr. H. N. Anderson, Acting General Manager of the two railways (see accompanying paragraph)



Interior of a new luxury coach on the Norfolk & Western Railway, U.S.A. Note the swivel seats, which can be turned to face windows

TRANSPORT SERVICES AND THE WAR—254

The Flying Bomb

In his review of the war situation to the House of Commons on August 2, the Prime Minister said that 5,340 flying bombs had been launched against this country to date, and that 4,735 persons had been killed and 14,000 more or less seriously injured. About 17,000 houses had been totally destroyed, and some 800,000 had received damage. Nearly one million persons who had no war business had been encouraged and assisted to leave London. The weight of flying bombs launched against this country from June 15 to July 31 was 4,500 tons; in the same period Allied Forces had dropped approximately 48,000 tons of high-explosive bombs on Germany.

Road Transport Licences

To save time, manpower, and paper, in the Ministry of War Transport offices and in the offices of road transport operators, the Minister has decided, as last year, to extend for 12 months from the date when it would otherwise have expired, any authority in force on July 31, 1944, to—

- (i) act as driver or conductor of a public service vehicle;
- (ii) act as driver or conductor of a tram, trolleybus, or hackney carriage in the Metropolitan Police District;
- (iii) use a public service vehicle;
- (iv) operate a road passenger service under a permit issued under previous Orders;
- (v) use a goods vehicle ("A," "B," or "C" carrier's licence).

This is being effected by the Emergency Powers (Defence) Road Vehicles & Drivers (Amendment) Order, 1944, which came into force on July 31. The extension is automatic and without fee and there is no need for anyone to apply for renewal. The Regional Transport Commissioner must be notified, however, of any change of address or change of vehicle specified.

This extension does not operate in respect of a road service licence, the holder of which, if he wishes to continue the service, must before the expiry of the licence obtain a permit under paragraph 5 of the principal Order of 1943.

Ordinary driving licences and excise licences are not affected.

Second (U.S.A.) Military Railway Service

Brigadier-General Clarence L. Burpee of Jacksonville, Florida, is in command of the 2nd Military Railway Service (modelled on the 1st M.R.S. in the Mediterranean Theatre), which will operate all railways for U.S.A. troops in the European continental operations. He has served 30 years with the Atlantic Coast Lines. His assistants are also experienced transport men, as follows:—

Colonel Everette H. Qualls of Nashville, Tenn., formerly Assistant Director of Bureau of Motor Carriers, Interstate Commerce Commission, Washington, D.C., who will serve as Executive Officer;

Major James W. Conway of Lakewood, Ohio, formerly of the Erie Railroad Company, who will handle administration;

Lt.-Colonel G. J. Mulich of Omaha, Nebraska, who served as a General Superintendent of the Union Pacific Railroad in civilian life, and will supervise the Operating and Shop Battalions that make up the man-power of the Service;

Lt.-Colonel William E. Elmes of Beaver Falls, Pa., a former Divisional Engineer of the New York Central System, who heads the engineering department responsible for

permanent way maintenance, work equipment, communications, and signals;

Colonel Sidney H. Bingham of New York, who will direct the Stores Department, and in civilian life was Superintendent of the New York City Transit System;

Lt.-Colonel Fay L. King of Sabula, Iowa, formerly of the Milwaukee Road, who will direct the equipment department, supervising the repair and reconditioning of locomotives and rolling stock.

Railway Salvage Efforts

Since the outbreak of war, the four main-line railways and London Transport have collected 1,000,000 tons of general salvage, 1,621,704 bottles, and 3,880,000 razor blades. The general tonnage consists of scrap metal, waste paper, rags, textiles, rope, twine, and rubber.

Razor blades, although not figuring in the general railway salvage schemes, have been collected by the staff and the travelling public. The proceeds of the sale of these old blades have been given to the R.A.F. Benevolent Fund.

Hill of Howth Service, G.N.R.

When all the electric tram services in Dublin were discontinued, from June 12, in view of the drastic cuts ordered in electricity consumption in Eire, the Great Northern Railway instituted a bus service between Sutton Station and Bally Post Office, in part replacement of its Hill of Howth tramway, as we recorded in our June 23 issue, page 649. This left nothing to Howth Summit, but the G.N.R. carried out a successful test on June 14 with the object of instituting a bus service from Howth Station to the Summit, a section of the electric tramway which had been left without service.

French Train Derailments

It is reported from Algiers that, between D-day and July 28, there were 180 derailments of trains by French Patriot Forces in the rear of the Normandy battlefield. In the fortnight up to July 28 many German trains bound for Normandy were derailed, particularly in the Paris region. Patriots in the Rhône Valley celebrated July 14 (Bastille Day) by blowing up 17 wagons. Traffic is said to be virtually at a standstill on the Bordeaux—Paris line. A symposium of reports from our correspondents, with particular reference to the Savoy region, was published last week, page 118.

Many Changes at the Frontier

In view of the rapid advance of the Red Army across Poland, there is topical interest in the story recently published in the U.S.A., by a former resident of Upper Silesia, of the need to make no fewer than three changes in crossing the Polish-German border in pre-war days by electric car from Katowice to Beuthen. He said that the electric cars in Katowice were very modern, painted a cream-yellow colour, and with pantographs that looked like those on the Pennsylvania Railroad.

There were both suburban and interurban lines, with trailers on the longer runs. Katowice is near the Polish-German frontier, but, although the line ran across the border, passengers had to change three times to get over it. Upon reaching the town of Lagiewniki (Poland), all passengers had to leave the car and show their passports to Polish border guards. Then they passed ahead into a "no man's land" and boarded another car on the same line; the first car could not go any further as there was a fence across the tracks. After riding about 100 yd. on the second car, a stop

was reached in front of a pile of sand on the tracks. Passengers alighted and took a third car, which carried them a short distance to the German inspection house, where Nazi border guards inspected the passports. Finally, after passing into Reich territory, a fourth car was boarded for the rest of the journey to Beuthen, Germany. The position of these places in relation to the pre-war frontier was clearly shown in the insert map we published on page 71 of our July 21 issue.

Turkish Summer Air Services

The Devlet Hava Yollari, the Turkish State-owned air traffic company, is maintaining the following air services during the summer months: Ankara-Istanbul daily except Sundays; Ankara-Adana daily except Sundays; Ankara-Sivas-Erzurum, and Ankara-Afion-Izmir (Smyrna) on Mondays, Wednesdays, and Fridays; and Ankara-Elazig-Diarbekr on Tuesdays, Thursdays, and Saturdays.

The Paris Metro

There appears to have been no change in the route length of the Paris Metro during 1943. At the beginning of the present year the total route length was 115 miles, to which the underground lines in the inner part of Paris contributed 92½, the suburban extensions 10, and the Seaux line 12½.

Within the past few days there have been reports of further reductions in the Paris underground services, said to be the result of the shortage of electric current. Some further stations are being closed, and the lifts are not working. As from July 30, all the underground services are being suspended on Sundays and Bank Holidays. Some lines, including the connection from the Porte d'Auteuil to the Porte d'Austerlitz, are stated to have been closed entirely.

Twelve suburban bus routes are reported to have been suspended.

New U.S.A. Rationing Plan for Lorries

The U.S.A. War Production Board announced on June 24 that rationing of new lorries and other commercial motor vehicles had been turned over to the Office of Defense Transportation. The new rationing plan came into effect on July 1. On March 9, 1942, the W.P.B. established rationing as a joint operation of the O.D.T. and the W.P.B. Since that time 239,096 vehicles have been rationed to essential civilian use, including 33,084 heavy lorries, 133,888 medium lorries, 49,455 light lorries, and 22,669 trailers. The W.P.B. has said that the stock has been practically depleted. Under the W.P.B. 1944 lorry production programme, approximately 80,000 medium and heavy lorries will be made available, as manufactured, to civilians in the U.S.A. through the O.D.T.

German Railway Material for Chile

The German Ferrostal Company recently informed the Chilean State Railways Company that a large part of the railway material to be delivered to Chile, under a contract signed before the outbreak of the war, has been destroyed in the course of Allied air raids on Germany, according to a message from Santiago de Chile. The Chilean State Railways Company is stated to have applied to the Chilean Government to enter into negotiations with the Swiss Republic with a view to the remaining material being transported to Switzerland so that it may be stored in that country until the end of the war, to prevent it from being destroyed. The Chilean State Railways are operated by a State Railway Corporation, with a General Manager appointed by the President of the Republic; the railways are worked by this corporation on commercial lines.

August 11, 1944

German Railway Staff Arrangements in Poland

In view of the extraordinarily rapid advance of the Red Army across Poland, there is topical interest in the arrangements made by the Germans for the accommodation of their railway staffs there, some details of which were given in the German technical press. The area under the control of the General-Gouvernement of Poland was regarded by the Germans as an occupied territory and large numbers of railwaymen were sent from the Reich to supervise the traffic. Housing was an urgent problem, and a special subsidiary undertaking was established to construct settlements in various localities, to which the occupying staff, originally housed in commandeered hotels and institutions, were eventually transferred. The first of such settlements were established at Krakow and Warsaw, and each dwelling was provided with sufficient ground for allotments (and sometimes enough also for keeping animals), electric light, and other amenities, with a restaurant serving a group of dwellings. The Germans were not permitted to use Polish restaurants, so separate ones were essential. At many settlements facilities were provided for housing temporary or travelling staff, with dormitories for sleeping when on a service journey. Lending libraries and stocks of musical instruments were provided, and occasionally rifle ranges. Holiday homes were built for Germans at Zakopane, Morszyn, and Truskawiec, with one for Poles at Piwniczna.

The German authorities profess to have taken great care of the interests of the non-German staff, providing travelling kitchens, fair rationing, with food cards, and facilities for obtaining better uniforms, as the original ones were stated to have been in very poor condition. Some 80,000 uniforms are said to have been issued, as well as 70,000 pull-overs and 38,000 felt-lined cloaks. A special clothes-cleaning plant was established in Warsaw, and a Polish firm was engaged to undertake mass footwear repair. It is even stated that special hairdressing saloons were established. German medical staff were sent out to the railways, with compulsory powers, and everyone was obliged to attend periodically for dental and other examinations. Some 70 ambulance vans, and X-ray equipment, are stated to have been provided for effecting tuberculosis tests, as that complaint is said by the Germans to have been serious in pre-war Poland. In one year 150,000 tests were made. The consumptive home for non-Germans, with 180 beds, was at Rudka. There was said to be a separate Polish medical staff to deal with non-German railwaymen.

The occupying management is stated to have issued staff journals for the Ostbahn system. The Polish one was called *Kolojewie* and the Ukrainian one *Saliznytschnyk*; these were issued in editions of 130,000 and 25,000 respectively. Language courses were arranged, with special reference to the correct use of railway terms. Attendance at schools was compulsory for non-Germans; 10 travelling teachers were allocated to each divisional management, of which there were three. A central school, able to sleep 150 students, was opened at Makow and 50 courses were held in 1942, with 727 pupils. There were always 50 non-Germans in training at Makow and at Lemberg (Lvov) and 25 at Warsaw, but the facilities at the last-named were in course of enlargement when the war situation on the Eastern Front developed so notably against the Germans. Another

school was being provided at Zembrzyce. There were said to be about 3,000 non-Germans attending training courses in various works, and three special training schools were established, at Warsaw (Praga), Tarnow, and Stanislau; another at Warsaw (Pruszkow) was begun, but it is not known how far it progressed. Numerous general educational courses were established, and in 1942 the totals are said to have been 43 for Germans (18 for examination preparation), and 142 for non-Germans (20 general, 108 language, and 14 shorthand). The language courses were attended by more than 4,700 persons.

(See editorial note, page 126).

Five Years of Slovak Railway Transport

When Slovakia, guided by German interests, severed her connection with Bohemia-Moravia and became an independent country on March 15, 1939, its railways and road were placed under the newly-established Ministry of Traffic & Public Works at Bratislava, the capital of the country. With the Soviet Forces massing along the northern frontier of Slovakia, and the probability that this puppet State will shortly cease its separate existence, it is of interest to review its transport progress during the past five years. It is stated that some 5,000 railwaymen of Czech nationality who were stationed on the Slovak section of what had been the Czechoslovak State Railways, were dismissed by the new Slovak administration; despite this diminution of the personnel by about 25 per cent., the services of the Slovak State Railways are claimed to have worked normally. At present, the staff numbers some 30,000, a total which is said to be below normal, considering the country's increasing railway traffic. The increases in passenger traffic are indicated by the following figures, which show the number of passengers carried, exclusive of those passing through Slovakia or travelling to foreign countries:

1939	...	...	21,395,190
1940	...	...	31,471,929
1941	...	...	37,445,163
1942	...	...	51,757,745
1943	...	...	62,685,558

The numbers of full wagon loads were as follows:

1939	...	...	712,752
1940	...	...	731,398
1941	...	...	736,443
1942	...	...	737,844
1943	...	...	776,330

In the same years, locomotive performance rose by some 10 per cent., as indicated by the following mileages:

1939	...	...	14,542,017
1940	...	...	15,009,466
1941	...	...	15,672,501
1942	...	...	15,486,518
1943	...	...	16,212,734

The development of the goods traffic performance is shown by the following figures, expressed in 1,000 gross-tonne-kilometres:

1939	...	...	5,142,054
1940	...	...	5,427,102
1941	...	...	6,347,053
1942	...	...	6,345,930
1943	...	...	6,873,346

The operating surplus of the past five years is stated to have exceeded Kronen 5,000,000,000, and to have enabled the railways to provide from their own means for the greater part of the capital works they required. For the acquisition and reconditioning of such items as railway rolling stock, and motorbuses, some Kronen 300,000,000 was spent in the five years under review, and the total value of orders placed was about Kronen 650,000,000; most of the locomotives were ordered in Hungary.

Electrification is one of the main points

in the Slovak State Railways improvement programme, and its first stages include building a number of power stations along the Vah and Morava rivers, preliminary work is now in hand for the conversion to electric traction of the 53-mile section between Liptovsky Svätý Mikuláš and Spišská Nová Ves of the northern main line.

During the past five years, fares and rates have been increased on November 1, 1940, and on August 15, 1942, but the Slovak State Railways are claimed to be among the cheapest on the Continent.

NEW LINES, RECONSTRUCTION, AND DOUBLE TRACKING

Great efforts are said to have been made in the past five years to develop the railway system, to improve station plants and other equipment, and to increase the total of locomotives and rolling stock. New lines built between 1939 and 1943 (both years inclusive) totalled 64 miles, including that from Dolná Stubná (Diviaky) to Harmanc in Central Slovakia, and the 32-mile line between Kapušany and Stražské in north-eastern Slovakia. In addition, avoiding loops have been built near Tomašovce, on the frontier with Hungary (to the south-east of Zvolen) thus obviating the necessity of operating trains to Lucenec (the Hungarian frontier station) in order to connect with the Tomašovce-Utekáč line; and a similar avoiding link to the east of Kuzmice Station on the southern frontier of north-eastern Slovakia, where the main line enters Hungarian territory in proximity to Legina-Michalany (the Hungarian frontier station and junction between the line leading northward across Slovak territory to Medzilaborce on the Slovak-Polish frontier and southward towards Budapest). The avoiding link does away with the necessity for Slovak trains to cross Hungarian territory.

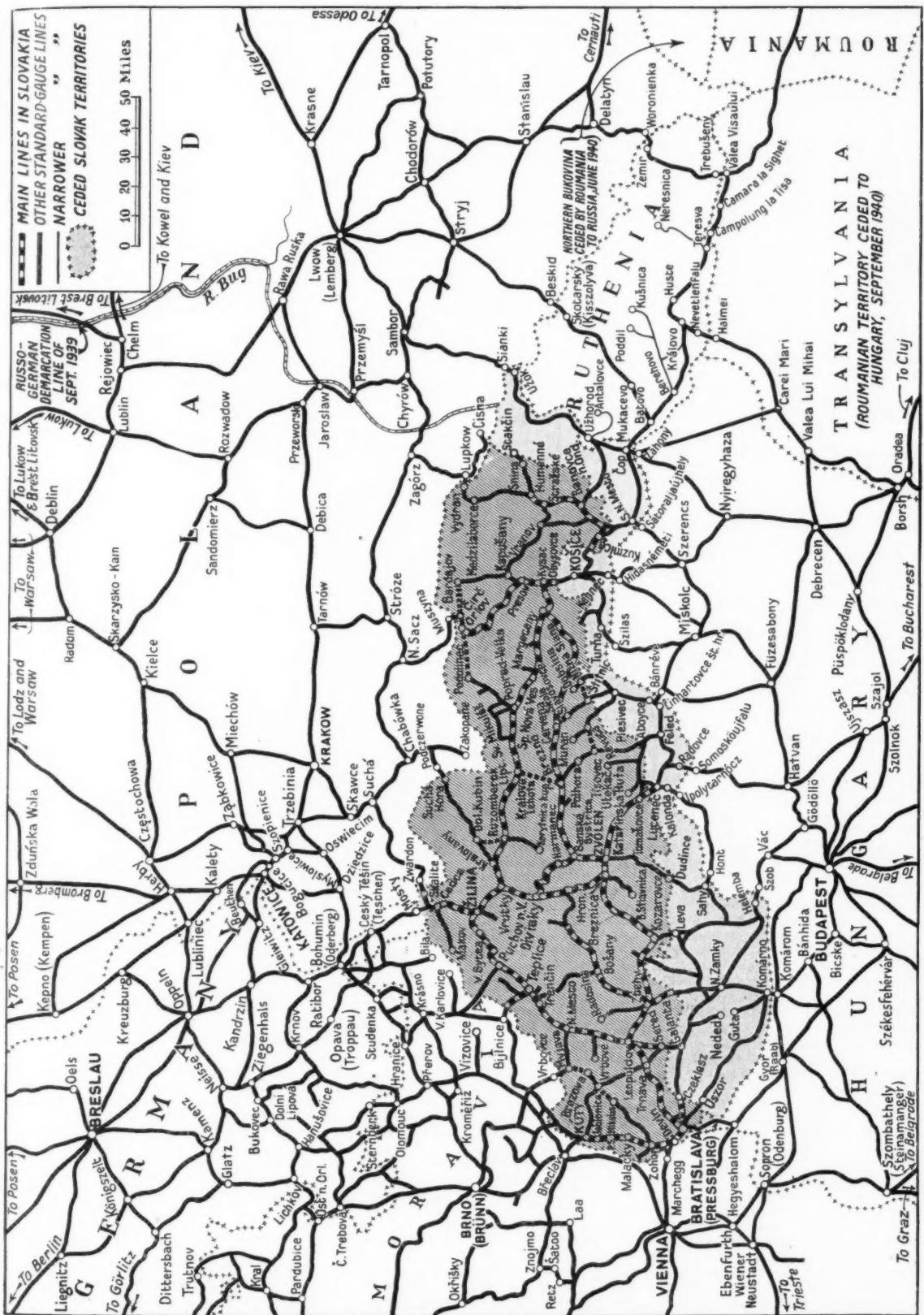
Second track was laid for a distance of 70 miles between Bratislava and Leopoldov* (40 miles) and on various sections between Žilina and Spišská Nová Ves, the most difficult part of the country's northern main line; the distance between the two places is 103 miles. The existing line between Kozařovce (on the southern frontier, to the east of Bratislava) and Červena Skala in the north-east, a distance of 111 miles, has been reconstructed for the use of fast trains. Lines now under construction total 51 miles, and second track is being laid along 68 miles of line. In addition, 20 miles of line are being strengthened to make them suitable for fast trains. This work, in addition to building or reconstructing a number of station buildings, locomotive depots, repair sheds, and signalling installations, has aggregated an expenditure of Kronen 1,600,000,000 in the past five years.

An earlier account of the development of the railways of Slovakia was published in our issue of September 26, 1941 (page 302). This showed how new routes were being evolved to meet the needs of a separate State. Later information has modified some statements then made, and a revised map is published opposite.

SLOVAK LINE CLOSED

Although passenger and goods traffic on the 11-mile Banská Bystrica to Harmanc section of the Banská Bystrica to Diviaky standard-gauge line was discontinued on November 15, 1943, trains are still being worked over the 19-mile Harmanc-Diviaky section, connecting at the latter station with the north-south main railway line between Vrútky and Zvolen. Banská Bystrica is on the southern main line connecting Zvolen in Central Slovakia with Margecany in Eastern Slovakia (on the northern main line).





Revised map of the railways of Slovakia and neighbouring territories. An account of the development of transport during the country's five years of independence, is given opposite

August 11, 1944

Questions in Parliament

Transport Workers' Wartime Service

Sir Waldron Smithers (Chislehurst—C.) on August 2 asked the Parliamentary Secretary to the Ministry of War Transport if he would recommend that a decoration should be given to all concerned with the British railways for the magnificent and often unseen work for the war effort that they had so efficiently carried out.

Mr. P. J. Noel-Baker (Parliamentary Secretary, Ministry of War Transport): As I said in answer to a question last week, the Government is fully conscious that all ranks of the railway personnel have, in common with those engaged in other forms of national production, done most notable work for the nation during the war. More than four hundred individual decorations, medals, and commendations have so far been awarded to railwaymen for outstanding service, and no doubt further recommendations will be made. The Minister of War Transport considers that this method of recognition is more appropriate than that suggested by Sir Waldron Smithers.

Lt.-Colonel Sir Thomas Moore (Ayr Burghs—C.) on August 2 asked the Parliamentary Secretary to the Ministry of War Transport if he would take suitable steps to convey to the bus drivers and conductors of the L.P.T.B. the gratitude and admiration of the people of London for their courtesy, skill, and courage during the period of the war.

Mr. Noel-Baker: I am grateful to Sir Thomas Moore for this opportunity of paying tribute once again to the magnificent way in which all road transport workers and, not least, the drivers and conductors of the L.P.T.B. have responded to the severe and testing demands made on them by the war. I propose to convey the terms of Sir Thomas Moore's question and of this reply to the Chairman of the Board, and I am sure that, in so doing, I shall be voicing the general sentiment both of the country and of the House.

(See editorial note, page 125)

Congestion at Paddington Station

Captain L. F. Plugge (Chatham—C.) on August 2 asked the Parliamentary Secretary to the Ministry of War Transport, how many people caught in the crush at Paddington Station on Saturday, July 29, were taken to hospital or given first aid by the personnel of the ambulances of St. John.

Mr. Noel-Baker: Twenty people who fainted were taken to the Great Western Railway Company's first aid posts in Paddington Station. I have no information about the number of people treated by units of the Order of St. John or by other organisations.

Captain Plugge: Will the Minister take all the necessary steps to ensure that such an unprecedented occurrence does not take place again?

Lt.-Colonel Sir Thomas Moore (Ayr Burghs—C.): Will it be safe for Members of Parliament to try to get a short holiday next Saturday?

Mr. J. D. Mack (Newcastle-under-Lyme—Lab.): Is not the solution not to issue more railway tickets than the capacity of the trains can take?

Mr. Noel-Baker: It is a very difficult problem but the railways do what they can in the matter.

Captain Plugge on August 2 also asked the Parliamentary Secretary to the Ministry of War Transport if his attention had been drawn to the chaos at Paddington Station on Saturday, July 29; if he was informed of the free-ticket issue to evacuees

from the London area and of the lifting of the ban on visiting defended areas; and what steps he had taken to provide trains for the increased number of travellers resulting from these orders.

Mr. Noel-Baker: The Minister of War Transport has, of course, been primarily responsible at all stages for the arrangements made for the railway transport of people who desire to leave London and other vulnerable areas during the attacks by flying bombs. Some weeks ago, he authorised the running of relief trains for this purpose, when they are required. Sixteen relief trains were run from Paddington on Saturday last.

Captain Plugge: Is the Minister aware that expectant mothers had to stand in the corridor for as much as eight hours? Will he take the necessary steps to see that those incidents do not occur and that British citizens are not treated as cattle?

Mr. Noel-Baker: It would be much better if expectant mothers left London under the organised evacuation scheme, in which case they would go in trains where they would have conditions suitable to their requirements.

Parliamentary Notes

Railway Control Agreement

On the Motion for the Adjournment of the House of Commons on August 1 Sir John Mellor (Tamworth—C.) raised what he described as a few small but important points concerning the Railway Control Agreement, which was signed in September, 1941, and was still in force. After disclosing that he had a small and indirect private interest in railway stocks, he said he had received a very large number of representations from his constituents on the matter. It was only fair to say that he had not received any representations whatsoever from the railway companies. He raised the matter entirely on his own responsibility. He had thought it was better to proceed entirely on the basis of what had already been published. On July 1 an official statement appeared in the newspapers which covered the railway companies' request for better terms for their stockholders and the Minister's refusal of any revision of the agreement. That statement quoted the railway companies' Memorandum of April 20, and, in that Memorandum, the Chairmen insisted that it had been understood, at the time the agreement was entered into, that, should new circumstances of a major character arise, the financial provisions of the agreement might be re-opened. Then, the Chairmen proceeded, in the Memorandum, to draw attention to the vastly increased traffic and more intensive use of their capital assets consequent on the participation of the United States of America in the European war. The Minister replied to that Memorandum by letter dated June 16. He said: "As my correspondence with Sir Ronald Matthews shows, the companies' acceptance of the fixed annual payment of the agreed amount was for the period of control."

The Minister said "his correspondence with Sir Ronald Matthews shows." Sir John Mellor wanted to know very much what that correspondence did show, and he had been asking in vain for the last six months for its publication. He asked whether it was the Minister's intention to repudiate the understanding which the railway companies had alleged. If it was his intention, he did not do it in a very communicative form, and he asked the Parliamentary Secretary what was the truth about the alleged understanding.

Did he suggest that it was an invention of the railway companies?

On December 8, 1943, he asked the Parliamentary Secretary this question: "Whether the financial provisions of the Railway Control Agreement were intended by the Government to represent a fair settlement on commercial principles or whether political considerations were involved."

The Parliamentary Secretary replied: "In the opinion of His Majesty's Government the provisions of the Railway Control Agreement constitute a fair consideration for the control and use of the railway company undertakings during the national emergency."

FAIRNESS OF TERMS

Sir John Mellor said he wanted to know what was meant by "fair consideration." Did the Parliamentary Secretary mean fair consideration on business principles and, if not, on what principles did he rely? In the Memorandum of April 20, the railway companies proceeded to say: "The Minister will remember that, although the railway companies in the national interest accepted the revised Agreement as a wartime measure and without considering the ordinary commercial considerations which would have to be taken into account in determining the amount of compensation to be paid for the use of the undertakings, either individually or collectively, under normal conditions, they at the same time made it clear that the minimum guaranteed annual payment was the lowest that could be accepted without grave injustice to their proprietors."

He asked the Parliamentary Secretary whether the Minister agreed that the railway companies accepted the revised Agreement without regard to ordinary commercial considerations. Did he agree with the proposition, because it did not seem that the railway companies' version was consistent with a business arrangement in any sense of the word. Did the Parliamentary Secretary contend that the new terms were in any sense a fair exchange for the old terms or were voluntarily accepted? It really would seem that the new terms were forced by political pressure down the throats of the railway companies. The terms were less favourable to the railway companies in almost any conceivable circumstances which could be imagined either then or since. The Agreement of February, 1940, the previous Agreement provided for a Government guarantee of £40,000,000. That included the London Passenger Transport Board. But the Agreement of December, 1941, provided an additional guarantee of £3,500,000 instead of the existing first charge of the same amount on the Pool. In 1941 the first charge of £3,500,000 was covered six times over by the earnings. Now for that very slight gain the railway companies sacrificed all claim to share in surplus profits and those surplus profits, in 1941, amounted to £21,000,000, and in 1943 to £60,000,000, which was in excess of the standard revenues to which they were entitled under the Railways Act of 1921. Even so, those standard revenues were not as great as the substituted standard for E.P.T., which the railway companies would undoubtedly have enjoyed had they had the comparative luxury of being assessable to E.P.T. He thought that all the junior stockholders of the railway companies had had a raw deal. The £78,000,000 preferred ordinary and deferred stocks of the London & North Eastern Railway had been deprived of

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all possibility of dividends for the duration of the war, and for at least one year after. They had exchanged the possibility, or even the probability, of something for the certainty of nothing. That did not sound like a bargain freely made, and that was a further reason why the had been pressing for the publication of this correspondence. The Parliamentary Secretary had objected to the publication on the ground, first, that it was confidential. Well, if it was confidential in the business sense of the word that could be disposed of by mutual agreement. Who insisted on keeping this correspondence secret? Was it the Ministry or was it the railway companies?

If there was still a security objection, could he have a definite promise now that the correspondence would be published as soon as the war was over?

MR. NOEL-BAKER'S REPLY

Mr. P. J. Noel-Baker (Parliamentary Secretary, Ministry of War Transport) said he wanted also to make one or two other points with which Sir John Mellor did not deal. The first was the assertion that the railway companies accepted the 1941 Agreement under what was called "Government duress." That was a serious allegation, but it had been roundly asserted in a pamphlet written by a certain Mr. Scott Adie, and entitled "The Scandal of the British Railways." He said without hesitation there was no foundation for it whatever. Nothing of the kind had ever been maintained by those who negotiated the Agreement for the railways. Perhaps it would suffice if he quoted what was said in the House when the Agreement was first debated in 1941 by his predecessor, who was now the Minister of Food (Colonel J. J. Llewellyn). He said that the railway companies had agreed that "A revision of the former arrangement is necessary" because of two Government decisions which had been made, and to allay the kind of doubts which had now arisen. Colonel Llewellyn went on to say: "I should like to emphasise that the agreement to revise the former arrangement was a voluntary matter and not imposed on the railways."

That brought him to the first point that had been made by Sir John Mellor: If the Agreement could be revised in 1941 when the Government thought that revision was required, why could not it be revised again when some of the stockholders thought that revision was required again? Sir John quoted the memorandum of the railway Chairmen, in which they said that the Government made it clear that, "if new circumstances arose, it might again require the Agreement to be amended." If that was so, Sir John asked why did the right for revision work in one direction only? The answer was quite simple. The "new circumstances" which might have required, or might require, a new arrangement had nothing whatever to do with the points which were dealt with in the present Agreement.

What Lord Leathers had in mind was the possibility of some new decision of major policy quite outside the Agreement, and affecting not merely the control period, but the more distant future. That was why the revision clause of the original Agreement was by agreement dropped. It was dropped because both parties felt that it was no longer appropriate in the new arrangement that was being made. He said with great confidence that none of the parties then held that either side

would have a right to ask for a revision of the fixed sum, the "rental" of £43,000,000 on which the bargain was ultimately struck. As Lord Leathers said in his answer to the Chairmen's memorandum, "The companies' acceptance of that fixed annual payment . . . was for the period of control." So was the Government's acceptance, and if things had turned out differently it would have been no more free to ask for the revision of that sum downwards than the companies were free to ask for a revision upwards of the compromise sum that was then agreed. He hoped Sir John would not think him unfair if he quoted a statement made by the Chairman of the Great Western Railway Company 15 months ago. Dealing with this very matter, he said that the new Agreement contained no provision under which the railways would be entitled to ask for revision. In any case, he said, although a good case might be made on commercial grounds for more generous treatment, there would be no justification for asking for the revision of an agreement ". . . accepted as a wartime measure in the national interest with the full knowledge that the annual payment in no way represented the existing or potential capacity of the undertakings."

He had another statement made by the Deputy-Chairman of the Great Western Railway (Major Sir Edward Cadogan) on March 9 this year in which he said: "My own personal view is that any approach to the Government now for revision would be premature and contrary to the spirit in which we accepted the Agreement."

Sir J. Mellor: They did approach the Government notwithstanding that statement.

Mr. Noel-Baker said that they put forward the request of some of their stockholders.

"FAIR CONSIDERATION"

Turning to the second point raised by Sir John Mellor, namely, if he had understood him rightly, whether this fixed annual payment was even tolerably just, Mr. Noel-Baker said Sir John made his point with great moderation, and he quoted the statement in the railway Chairmen's memorandum in which they explained why they had accepted the Agreement "as a wartime measure," and in which they went on to say that they had made it clear in 1941 that the sum they accepted was the least that could be accepted without grave injustice to their proprietors. Sir John contrasted that with an answer which he (Mr. Noel-Baker) gave him to a question last December. If he understood Sir John, he found a conflict between the answer to the question and the Chairmen's statement. He told Sir John frankly that he found none. The Government was the guardian of the public purse; it had to make the best bargain, from the taxpayers' point of view, which the railway chairmen would voluntarily accept. They did so; they held them and they held still that the resulting sum was "a fair consideration" for the control and use of the railway undertakings during the national emergency. What was this "fair consideration?"

For the purpose of the present controversy the four main-line railway companies must be separated from the London Passenger Transport Board. The four main-line companies received from controlled sources a fixed annual payment of £38,200,000. They received from uncontrolled sources—their investments in

road haulage undertakings, their interest in the railways of Northern Ireland, and so on—a further sum of £1,800,000—that sum had increased by £700,000 since 1930. Their net revenue under the Agreement was, therefore, £38,200,000 plus £1,800,000, a total of £40,000,000. He said the other day in answer to a supplementary question in the House, that that meant the railways got a remuneration considerably above anything they earned in peacetime. One of the Press critics ventured to say that that was "bunk." His remark was really addressed, not at him, but at the late Sir Kingsley Wood, for, when Sir Kingsley Wood was Chancellor of the Exchequer, the Treasury wrote a letter in which they said—he was quoting—"that the annual payment exceeds by a substantial amount the average net revenue of the controlled undertakings in the period immediately before the war." The critic, of course, had chosen for comparison the two best years out of the last ten—the two years in which railway net revenue was highest, 1929 and 1937. If he followed his method, and chose the two lowest years, he could show that the present payments were nearly 37 per cent. above what the railways earned in those two years. But the only reasonable plan was to take the average net revenue of the last ten years before the war, from 1929 to 1938; that average net revenue was £34,000,000. In other words, the Agreement gave the four main-line railway companies £5,200,000 more than their average for the last ten years of peace—an increase of nearly 15 per cent. That increase must be viewed against the general background of Government policy throughout the war. With the agreement of all parties and in every branch of productive capacity, the Government had consistently applied the principle that there should be a strict limitation of profits from the war; it had always excluded ordinary commercial considerations.

Sir J. Mellor: What about the substituted standards that it allows to industry?

Mr. Noel-Baker said that was a very hypothetical matter he could not argue now. It was extremely doubtful whether on any standards they would come out better. But he submitted with great confidence that the position of a great public service like this was quite different from that of an ordinary firm manufacturing munitions. It was because of that policy of which he was speaking that the Government fixed the sum of £38,200,000 and still thought it just. The Minister of Food in arguing that in this Agreement "we have done fairly by the shareholders," also declared that the railways, in asking for the terms they got, were not "in any way acting as war profiteers." And he went on: "It was because they did not want to be in this position that they accepted this Agreement."

JUNIOR STOCKS

It was sometimes argued that the Agreement bore with particular injustice on the holders of the junior railway stocks, which, for some reason which he did not understand, were alleged to be the property not of "big business interests," but of "little men." That view had evoked some sympathy. In fact, it was without foundation of any kind. Now, as before the war, the senior stocks—the pre-ordinary stocks—absorbed £31,400,000 of the net revenue of £40,000,000. That left, in 1937—the

August 11, 1944

best year since 1929—£6,500,000 for the junior stocks. Now the amount was £8,600,000, an increase of nearly 33 per cent.—that was taking the "Equity consideration" above. That increase was reflected in the yield. It was, of course, true that two classes of L.N.E.R. stock, which together reached a nominal total of £78,600,000, received no dividend under the Agreement. But they had received none for sixteen years before the Agreement was made. Let the House consider the other junior stocks: the L.N.E.R. 4 per cent. second preference for the four years 1935-38 averaged a dividend of $\frac{1}{8}$ per cent. Under the Agreement they had averaged $2\frac{1}{2}$ per cent. He could give other figures to the same effect. There were some people who held that justice would not be done unless these junior stocks were now receiving the full dividend which would be payable, if the railway standard revenue were earned—and that would be, on some of them, a revenue of 8 per cent. They talked as if the Railways Act of 1921 had given the companies a legal right to a net revenue of £51,400,000 a year. Mr. Scott Adie said that under the Act the companies were entitled to retain "that sum," and he called it "the correct and legal return" on the railways' capital. That misleading language made it necessary for him to recite some of the facts about the standard revenue. The Act of 1921 did not give the shareholders a legal right to that, or to any other sum. It set that sum as a target by reference to which rates and charges should be fixed by the Tribunal. That was a very different thing. Nor was that all.

CHANGES SINCE 1913

There were other facts which must be remembered. The target, the standard revenue, was fixed on the basis of the railways' net revenues in the year 1913. That year was the record year, the most prosperous year, in the whole of railway history. It was a year in which the labour costs of the railways were far lower than they had since become. It was now 31 years ago. Never once, since the Railways Act of 1921 was passed, had that standard revenue been earned. The Railway Tribunal and the railway companies recognised that it could not be earned; they decided that an increase of rates and charges would bring in no more revenue. Since the Act of 1921 was passed the whole economic basis of the railways had been profoundly changed by the growth in the competition of road transport, both for passengers and goods. Surely those facts were enough to show that the Minister of War Transport could not possibly take the standard revenue as a basis; that, indeed, the standard basis was quite irrelevant to the problem which he had to face; that if he had taken it as a basis, he would have admitted a claim for greatly enhanced profits as a result of the war.

There was one other point by Sir John Mellor with which he ought to deal. He asked why the Minister had not published, and was not now willing to publish, the documents which were exchanged, and the records of the discussions which took place, when the Agreement was drawn up. He had spoken of the security considerations that were involved. He would not like to press the point at the present stage of the war.

Mr. Noel-Baker had not finished speaking when the hour fixed for the Adjournment of the House under the Standing Orders arrived.

Notes and News

Chief Engineer Required.—A provincial bus company requires the services of a Chief Engineer. Details are given in our official notices on page 147.

Traffic Inspector Required.—The Nigerian Government requires the services of a traffic inspector for the Railway Department. Details are given in our official notices on page 147.

George Spencer, Moulton & Co. Ltd.—In the report for the year 1943 it is stated that the profit was £91,366, to which has to be added £22,265 brought forward, making £113,631. After deducting £5,700 bank loan interest and £8,000 provision for taxation and contingencies, there is a balance of £39,931. A sum of £10,000 is transferred to reserve, and the dividend on the ordinary shares is again 5 per cent., less tax, leaving £23,481 to be carried forward.

Waverley Inquiry Office.—To cope with the increase in the number of travel inquiries, the L.N.E.R. has reorganised its inquiry office at Waverley Station, Edinburgh. Telegrams now can be dispatched by passengers and others directly from there, and about 150 telegraph messages go out daily; additional telephones have been installed, with silent indicators, to minimise noise and interruption, and there are six lines, three direct and three connected through the railway switchboard. A staff of sixteen working in two shifts of eight runs the inquiry office, which is open from 7 a.m. to 11 p.m.

Keith Blackman Limited.—For the year to March 31, 1944, trading profit, after charging all expenses, was £218,455 (£178,103) and miscellaneous receipts were £806 (£788). The profit and loss account shows a profit, after making provision for depreciation, directors' fees and interest, of £192,451 (£149,601), to which has to be added £44,546 brought forward, making £236,997 available for appropriation. Provision for taxation takes £150,000 (£96,080), and for deferred repairs £3,000 (£10,000), and the amount transferred to reserve account is £10,000 (£15,000). The dividend on the ordinary shares is again 20 per cent., less tax, and £43,497 is carried forward.

Ruston & Hornsby Limited.—Mr. G. R. Sharpley, presiding at the recent annual general meeting, said that the new Managing Director, Mr. Bone, had recently been over to the United States and studied intensively the kind of competition which would have to be faced in the future from vast and highly specialised factories turning out an almost unbelievable volume of this company's class of product in that country. While fully realising the gravity of this potential competition, Mr. Bone had come to the conclusion that with leadership and co-operation we should win through. Strict economy would have to be observed. This company had for many years specialised upon export to all countries of the world. In the opinion of the directors the difficulties and handicaps which had hitherto faced British trade could only be met by the adoption of certain measures which he had reason to believe the Government, and in particular, the Board of Trade, through the Department of Overseas Trade and the Export Credits Guarantee Department, now had under consideration. He referred primarily to a stabilised world monetary policy to suit the new requirements of industry. A revision of the whole system of Government commercial representation abroad was essential. Furthermore, credit assistance hitherto granted by Government to industry, and particularly

that available to the heavy industries in respect of capital goods, would have to be developed in association with industry itself.

Chilean Railway Abandonment.—The Chilean Department of Railways has offered for sale the land, buildings, rails, equipment, and other materials of the narrow-gauge line which ran eastward some 12 miles from General Cruz (on the main north-south railway) to Pemuco. This line, which served an agricultural area in the

British and Irish Railway Stocks and Shares

Stocks	Highest 1943	Lowest 1943	Prices	
			August 8, 1944	Rise/ Fall
G.W.R.				
Cons. Ord. ...	65 $\frac{1}{2}$	57 $\frac{1}{2}$	60	+ $\frac{1}{2}$
5% Cons. Pref. ...	120 $\frac{1}{2}$	108	117 $\frac{1}{2}$	+ 1 $\frac{1}{2}$
5% Red. Pref. (1950) ...	110 $\frac{1}{2}$	106	105	+ 1
5% Rt. Charge ...	137 $\frac{1}{2}$	123 $\frac{1}{2}$	131 $\frac{1}{2}$	+ 1 $\frac{1}{2}$
5% Cons. Guar. ...	135 $\frac{1}{2}$	121 $\frac{1}{2}$	130 $\frac{1}{2}$	+ 1 $\frac{1}{2}$
4% Deb. ...	118	107 $\frac{1}{2}$	114 $\frac{1}{2}$	+ 1
42% Deb. ...	119	109 $\frac{1}{2}$	115 $\frac{1}{2}$	+ 1
4% Deb. ...	124 $\frac{1}{2}$	116	120 $\frac{1}{2}$	+ 1 $\frac{1}{2}$
5% Deb. ...	138	127	134 $\frac{1}{2}$	+ 1
21% Deb. ...	77	72 $\frac{1}{2}$	74 $\frac{1}{2}$	+ 1 $\frac{1}{2}$
L.M.S.R.				
Ord. ...	34 $\frac{1}{2}$	28	31 $\frac{1}{2}$	+ 1 $\frac{1}{2}$
4% Pref. (1923) ...	66 $\frac{1}{2}$	58	58 $\frac{1}{2}$	+ 1
4% Pref. ...	80 $\frac{1}{2}$	73	76 $\frac{1}{2}$	+ 1 $\frac{1}{2}$
5% Red. Pref. (1955) ...	105 $\frac{1}{2}$	102	103 $\frac{1}{2}$	+ 1
4% Guar. ...	107	98 $\frac{1}{2}$	100 $\frac{1}{2}$	+ 1 $\frac{1}{2}$
4% Deb. ...	109 $\frac{1}{2}$	103 $\frac{1}{2}$	104 $\frac{1}{2}$	+ 1
5% Red. Deb. (1952) ...	111 $\frac{1}{2}$	108	109 $\frac{1}{2}$	+ 1
L.N.E.R.				
5% Pref. Ord. ...	12 $\frac{1}{2}$	7 $\frac{1}{2}$	8 $\frac{1}{2}$	+ 1
Def. Ord. ...	5 $\frac{1}{2}$	3 $\frac{1}{2}$	4 $\frac{1}{2}$	+ 1
4% First Pref. ...	66 $\frac{1}{2}$	57 $\frac{1}{2}$	58 $\frac{1}{2}$	+ 1
4% Second Pref. ...	36 $\frac{1}{2}$	30 $\frac{1}{2}$	32 $\frac{1}{2}$	+ 1
5% Red. Pref. (1955) ...	99 $\frac{1}{2}$	93	99 $\frac{1}{2}$	+ 1
4% First Guar. ...	102 $\frac{1}{2}$	94	98 $\frac{1}{2}$	+ 1 $\frac{1}{2}$
4% Second Guar. ...	93 $\frac{1}{2}$	85 $\frac{1}{2}$	90 $\frac{1}{2}$	+ 1 $\frac{1}{2}$
3% Deb. ...	86 $\frac{1}{2}$	78 $\frac{1}{2}$	82 $\frac{1}{2}$	+ 1 $\frac{1}{2}$
4% Deb. ...	109 $\frac{1}{2}$	101 $\frac{1}{2}$	104 $\frac{1}{2}$	+ 1
5% Red. Deb. (1947) ...	106 $\frac{1}{2}$	102	103	+ 1
4% Sinking Fund Red. Deb. ...	108	103 $\frac{1}{2}$	105 $\frac{1}{2}$	+ 1
SOUTHERN				
Pref. Ord. ...	80	72 $\frac{1}{2}$	76	+ 1 $\frac{1}{2}$
Def. Ord. ...	26 $\frac{1}{2}$	20 $\frac{1}{2}$	25 $\frac{1}{2}$	+ 1 $\frac{1}{2}$
5% Pref. ...	119 $\frac{1}{2}$	106 $\frac{1}{2}$	116 $\frac{1}{2}$	+ 1
5% Red. Pref. (1964) ...	114	108 $\frac{1}{2}$	113 $\frac{1}{2}$	+ 1
5% Guar. Pref. ...	136	122	130 $\frac{1}{2}$	+ 1
5% Red. Guar. Pref. (1957) ...	117	109 $\frac{1}{2}$	113 $\frac{1}{2}$	+ 1
4% Deb. ...	117 $\frac{1}{2}$	106	112 $\frac{1}{2}$	+ 1 $\frac{1}{2}$
5% Deb. ...	137	126	134	+ 1
4% Red. Deb. (1962-67) ...	112	106 $\frac{1}{2}$	109 $\frac{1}{2}$	+ 1
4% Red. Deb. (1970-80) ...	112	107	109 $\frac{1}{2}$	+ 1 $\frac{1}{2}$
FORTH BRIDGE				
4% Deb. ...	109	104 $\frac{1}{2}$	104	+ 1
4% Guar. ...	105	102 $\frac{1}{2}$	102 $\frac{1}{2}$	+ 1
L.P.T.B.				
41% "A" ...	125 $\frac{1}{2}$	114	121 $\frac{1}{2}$	+ 1
5% "A" ...	133 $\frac{1}{2}$	123	130 $\frac{1}{2}$	+ 1
3% Guar. (1967-72) ...	100 $\frac{1}{2}$	97	99	+ 1
5% "B" ...	124	114	121 $\frac{1}{2}$	+ 1
"C" ...	72	53	71	+ 1
MERSEY				
Ord. ...	34 $\frac{1}{2}$	27	34 $\frac{1}{2}$	+ 1
3% Perp. Pref. ...	68	59 $\frac{1}{2}$	69	+ 1
4% Perp. Deb. ...	104	102 $\frac{1}{2}$	103	+ 1
3% Perp. Deb. ...	83	78 $\frac{1}{2}$	79	+ 1
IRELAND* BELFAST & C.D.				
Ord. ...	9	6	9 $\frac{1}{2}$	+ 1
G. NORTHERN				
Ord. ...	24 $\frac{1}{2}$	16	25	+ 1
Pref. ...	—	—	43 $\frac{1}{2}$	+ 1
Guar. ...	—	—	66 $\frac{1}{2}$	+ 1
Deb. ...	—	—	86	+ 1
G. SOUTHERN				
Ord. ...	30	9 $\frac{1}{2}$	55	+ 1
Pref. ...	30	11	56	+ 1
Guar. ...	64	26 $\frac{1}{2}$	73	+ 1
Deb. ...	88 $\frac{1}{2}$	51 $\frac{1}{2}$	94 $\frac{1}{2}$	+ 1

* Latest available quotations

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OFFICIAL NOTICES

Overseas Employment

TRAFFIC INSPECTOR required by the Nigerian Government for the Railway Department for the duration of the emergency or one tour of 12 to 24 months, whichever is the lesser period, with possibility of permanency. Salary £400 x £12—£560 a year. Separation allowance for married men £160 on £400. Outfit allowance £25. Free passages and quarters. Candidates must have had good all-round training on a Home Railway, both inside and outside work, preferably in both operating and commercial departments and should be able to undertake the inspection, supervision and execution of general railway traffic working.

Applications in writing (no interviews) stating date of birth, full details of qualifications and experience, including present employment; also identity and National Service or other registration particulars, and quoting Ref. No. O.S. 117, should be addressed to the Ministry of Labour and National Service, Appointments Department, Sardinia Street, Kingsway, London, W.C.2.

central valley midway between San Rosendo in the south and Chillan in the north, has been abandoned.

New Air Line in Argentina.—A new air service, operated by the Aeropostal Company, was opened between Buenos Aires and Rio Gallegos early in May; the length is about 1,260 miles. Passenger, mail, and parcels are carried in three-engined aircraft.

Turkish Rolling Stock Repair.—According to a recent report from Istanbul, repairs were effected in the shops of the Turkish State Railways during 1943 to 550 locomotives, 960 carriages, and 6,000 wagons. To cope with increasing requirements, the railway repair shops at Eskisehir and Sivas are to be extended considerably.

Mexican Railway Improvements.—The Mexico North-Western Railway Company, which serves the mountainous district of the State of Chihuahua (called the Sierra Madre Occidental) is planning extensive improvements to its railway. It provides what is virtually an extension into northern Mexico of the U.S.A. railway system.

The General Electric Co. Ltd.—Sir Harry Railing, Chairman, presiding at the annual general meeting of the General Electric Co. Ltd., said that for a great many years the company had carried out activities which were now being hailed in some quarters as new discoveries. It had always paid the greatest attention to export and had a full-scale overseas organisation which, in spite of the difficulties of war, had been maintained intact to meet the post-war need. The post-war world would demand more than ever from industry, and especially from export industry, imagination, initiative, pioneer spirit, the courage to run risks and to make quick decisions. All these qualities were much more likely to be obtained from individuals, from specialists operating in industrial units of manageable size, than from the State.

Great Western of Brazil Railway Rent.—The directors announce that, as a result of negotiations by the company's representatives in Rio de Janeiro, the President of Brazil has authorised an amendment of the clause in the company's contract regarding the amount of rental payable in respect of the leased lines. Henceforth this is fixed at Cr. \$150,000.00 (£1,885) a year and no longer will be on a sliding scale based on the receipts per kilometre as provided for in the 1929 contract. Stockholders are reminded that arrears of debenture interest are still outstanding and that apart from the necessity for providing for overdues renewals, the heavy increase in working expenditure entailed by recent

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in possession of the entire assets of the corporation. At the ceremony he referred to the difficulties through which the corporation had passed since its inception in October, 1936. He would do his best to improve the services, which were used by almost 30 per cent. of the population of the Republic.

Railway Trespassing in Scotland.—Serious trespassing on the Greenock Section of the L.M.S.R. has led to an arrangement between the police and the railway authorities by which offenders are now to be charged by the police under the Defence (General) Regulations. A statement to this effect was made recently at Greenock Sheriff Court by the Deputy-Fiscal, who explained that formerly the railway authorities would have dealt with trespassing, but in wartime it became an offence against the State and was dealt with by the police. The position in the Greenock area had become so serious that railway traffic had been slowed up and drivers' nerves had been affected by the knowledge that accidents had happened.

Chloride Electrical Storage Co. Ltd.—The report for the year to March 31, 1944, states that the profit (including profits of subsidiary companies to the extent of gross dividends declared and income from other investments) after providing for E.P.T. was £517,672 (£519,806). Deducting directors' fees £5,000 and provision for income tax £245,000 leaves £267,672. Adding £163,258 brought forward makes a total available of £430,930. Appropriations are made of £25,000 to employees' pension fund, of £2,000 to benefit fund, of £10,000 for extending application of scheme of pensions for employees of subsidiaries, and of £50,000 to reserve for development and research. On the "A" and "B" ordinary stocks the dividend for the year is 10 per cent. and there is a bonus of 5 per cent., both less tax, and the amount to be carried forward is £176,905.

Contracts and Tenders

Below is a list of orders placed recently by the Egyptian State Railways:—

General Electric Co. Ltd.: Tubular lamps.
British Insulated Cables Limited: Copper wire.

Thomas de la Rue Plastics Limited: Boxes, bakelite.

Sun Electrical Co. Ltd.: Clips.
Telegraph Condenser Co. Ltd.: Condensers.

Ericsson Telephones Limited: Induction coils and plugs.

Siemens Bros. & Co. Ltd.: Condensers.
Automatic Telephone & Electric Co. Ltd.: Condensers.

Railway Stock Market

As was to be expected, sentiment in stock markets responded to the excellent trend of the war news, and prices in most sections showed a renewed upward movement, reflecting improved demand and the small amount of selling in evidence. After deduction of half-yearly dividends from prices of Great Western ordinary, Southern preferred and L.M.S.R. and L.N.E.R. preference stocks, home railway junior stocks attracted rather more attention, and showed a moderate, although widespread, rally. The dividend deductions appeared to draw more attention to the large yields obtainable on the junior stocks. There was no marked expansion in demand, but prices showed readiness to respond to any small improvement in buying orders. L.N.E.R. second preference still yields over 8½ per cent., Southern deferred nearly 8½ per cent., L.M.S.R. ordinary also not far short of 8½ per cent., and Great Western ordinary fully 7½ per cent. As events have turned out, the fixed rental agreement has proved much more favourable to the Government than the railway stockholders, and in the circumstances it is to be hoped that the Government as soon as possible will give definite indications of its views as to post-war transport and the position of the railways. The war has demonstrated that given capacity working, the railways can show earnings which would permit of favourable dividends on the junior stocks, and that in the circumstances it can hardly be contended that the main-line companies are over-capitalised. It is

true that even if conditions of industrial activity and full employment rule in the post-war period, the railways could not be expected to keep receipts at the record level achieved during the war, and that whatever the final agreement as to the post-war set-up, there will have to be an upward adjustment in railway charges, particularly in view of the higher costs likely to persist. Home railway debentures so far have not responded to the rise in gilt-edged stocks, which has followed satisfaction with the longer maturity of the new issue of 3 per cent. Savings Bonds. On the other hand, yield considerations tended to draw attention to L.M.S.R. and L.N.E.R. preference stocks.

Reflecting the war news, French railway sterling bonds have moved higher in price. An outstanding feature was a general rally in Argentine railway securities, sentiment benefiting from the more hopeful views as to the political situation and from the reference to the attitude of the Argentine made in Mr. Churchill's speech. Other factors have also tended to have a favourable influence on South American securities generally, including the announcement that agreement with the Brazilian Government will permit a cash distribution of about 80 per cent. to holders of Southern San Paulo Railway 5 per cent. debentures, and of 36 per cent. to holders of Sorocabana Railway first debentures. Prices of these debentures were marked up to comply with these announcements. More-

over, Cordoba Central Trust 3½ per cent. debentures jumped 9 points to 99 on the decision of the Argentine Government to repay the Argentine State Railway sterling bonds, which form the underlying securities of the trust.

Compared with a week ago, Great Western ordinary has improved from 59½ to 60, but the preference at 117½ and the guaranteed stock at 129½ were slightly lower on balance; the 4 per cent. debentures remained at 114½. L.M.S.R. ordinary rallied from 30½ to 31, the senior preference from 76½ to 76½, and the 1923 preference from 58½ to 59, and the guaranteed stock kept at 100½. L.N.E.R. second preference at 32½ was the same as a week ago, as was the first preference at 58½, and the first and second guaranteed at 98½ and 90½ respectively were slightly lower on balance. Southern deferred recovered from 24½ to 24½, but the preferred ordinary at 76 was the same as a week ago, as was the 5 per cent. preference at 117. London Transport "C" at 71 was unchanged on balance.

Among Argentine rails, B.A. Gt. Southern rallied from 10½ to 12½, the 5 per cent. preference from 22 to 24 and the 4 per cent. debentures from 53 to 57; similar gains were recorded among the stocks of other leading Argentine railways. Antofagasta ordinary was better at 10½, San Paulo ordinary steady at 48, and United of Havana debentures slightly better at 28½. Canadian Pacifics at 16½ were unchanged.

Traffic Table and Stock Prices of Overseas and Foreign Railways

Railways	Miles open	Week ending	Traffic for week		No. of Weeks	Aggregate traffics to date			Shares or stock	Prices				
			Total this year	Inc. or dec. compared with 1942/3		Totals		Increase or decrease		Highest 1943	Lowest 1943	August 8, 1944	Yield % 1943	
						1943/4	1942/3							
South & Central America														
Antofagasta (Chili) & Bolivia	834	30.7.44	£ 27,710	-	5,150	30	£ 884,440	£ 852,790	+	31,650	Ord. Stk.	15½	10	10½ Nil
Argentine North Eastern	753	29.7.44	15,528	+	2,472	4	65,688	59,508	+	6,180	6 p.c. Deb.	22½	18	41 Nil
Bolivar	...	174 June, 1944	5,238	+	370	26	31,756	32,414	-	638	Bonds	23½	19	19½ Nil
Brazil	...													
Buenos Ayres & Pacific	2,807	29.7.44	113,400	+	34,200	4	447,360	357,600	+	89,760	Ord. Stk.	8½	5½	5½ Nil
Buenos Ayres Great Southern	5,080	29.7.44	163,800	+	37,800	4	674,700	585,600	+	89,100	Ord. Stk.	17½	9½	12½ Nil
Buenos Ayres Western	1,930	29.7.44	59,820	+	20,700	4	249,600	198,420	+	51,180	"	16	9½	11½ Nil
Central Argentine	3,700	29.7.44	168,315	+	35,724	4	691,122	517,311	+	173,811	Dfd.	10½	6½	8½ Nil
Do.														
Cent. Uruguay & M. Video	972	29.7.44	31,920	+	2,478	4	142,927	135,052	+	7,875	Ord. Stk.	7½	4½	5 Nil
Costa Rica	262	May, 1944	26,525	+	3,664	48	25,679	173,827	+	77,852	Stk.	16	12½	14½ Nil
Dorada	70	June, 1944	26,226	+	3,993	26	149,309	120,492	+	28,817	I Mt. Db.	96	92	96 Nil
Entre Rios	808	29.7.44	23,640	+	5,430	4	92,772	80,466	+	12,306	Ord. Stk.	9	5½	4½ Nil
Great Western of Brazil	1,030	29.7.44	18,600	+	2,900	30	654,800	471,400	+	183,400	Ord. Sh.	59½	24½	27½ Nil
International of C.I. Amer.	794	June, 1944	\$528,673	+	\$63,322	26	\$4,200,514	\$3,904,639	+	\$295,875	1st Pref.	24	18	— Nil
Interoceanic of Mexico														
La Guaira & Caracas	224	June, 1944	8,510	+	960	31	54,940	61,140	-	6,200	5 p.c. Deb.	96	80	79 ½ Nil
Leopoldina	1,918	29.7.44	45,250	+	7,513	29	1,359,352	1,015,547	+	343,805	Ord. Stk.	7½	4	4½ Nil
Mexican	483	21.7.44	ps. 363,300	ps. 18,200	ps. 1,327,100	3	ps. 1,156,100	ps. 171,000	ps. ps.	—	Ord. Stk.	1½	¾	¾ Nil
Midland Uruguay	319	June, 1944	15,425	+	2,1	52	203,234	184,947	+	18,287	Ord. Sh.	83½	71	73 ½ Nil
Nitrate	382	31.7.44	11,714	+	3,618	31	110,635	86,278	+	24,357	Pr. Lt. Stk.	75	51½	71 ½ Nil
Paraguay Central	274	28.7.44	56,308	+	8,469	4	920,139	\$175,510	+	854,629	Pref.	17½	10½	10½ Nil
Peruvian Corporation	1,059	July, 1944	118,640	+	18,622	4	—	—		—				
Salvador	100	Apr., 1944	c 152,000	+	c 30,000	43	c 1,310,000	c 1,034,000	+	c 276,000	—	—	—	
San Paulo	153½	—	—								Ord. Stk.	7½	57	48 ½ Nil
Talatal	160	June, 1944	5,530	+	2,925	52	65,330	48,811	+	16,519	Ord. Sh.	37½	20½	16½ Nil
United of Havana	1,301	29.7.44	50,083	+	312	4	191,447	223,061	—	31,614	Ord. Stk.	8½	3½	3 Nil
Uruguay Northern	73	June, 1944	1,477	+	36	52	17,889	17,259	+	630	—	—	—	—
Canada														
Canadian Pacific	17,034	31.7.44	1,831,200	+	81,200	30	36,378,200	32,574,800	+	3,803,400	Ord. Stk.	18	13½	16½ £2½
India														
Barsi Light	202	June, 1944	23,805	+	5,970	13	75,487	63,075	+	12,412	Ord. Stk.	—	—	—
Bengal-Nagpur	3,267	May, 1944	1,008,600	—	120,600	9	2,094,450	2,177,850	—	83,400	B. Deb.	104	101	113 3½
Madras & Southern Mahratta	2,939	Mar., 1944	358,125	—	7,925	52	10,447,866	8,913,942	+	1,533,924	Inc. Deb.	101	93	100 ½ £4½
South Indian	2,349	20.12.43	199,410	+	24,449	37	5,321,558	4,562,445	+	750,113	—	—	—	—
Various														
Egyptian Delta	607	20.6.44	17,842	+	5,043	11	150,324	111,230	+	39,094	Prl. Sh.	6½	2½	4 Nil
Manila	—	—	—								B. Deb.	45	32	48 Nil
Midland of W. Australia	277	June, 1944	19,914	—	17,435	52	332,900	392,863	—	59,963	Inc. Deb.	101	93	100 ½ £4½
Nigerian	1,300	27.5.44	254,099	—	2,789	9	—	—		—	—	—	—	—
South Africa	13,291	10.6.44	843,199	+	7,292	9	8,624,126	8,173,327	+	450,799	—	—	—	—
Victoria	4,774	April, 1944	1,188,999	—	212,162	—	—	—		—	—	—	—	—

Note. Yields are based on the approximate current price and are within a fraction of ½. Argentine traffics are given in sterling calculated @ 16½ pesos to the £.

† Receipts are calculated @ 1s. 6d. to the rupee.